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A monthly journal for the Practitioner and his Staff

VOL. III, NO. 8 APRIL, 1953

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The Dental Laboratories Section of the Surgical Instrument Manufacturers' Association

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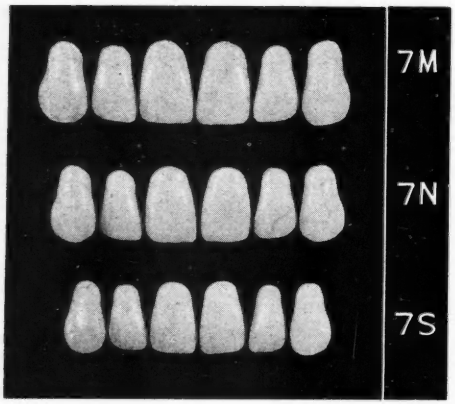

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THE DENTAL PRACTITIONER

A Monthly Journal for the Practitioner and his Staff

(Incorporating the Proceedings of the British Society of Periodontology and the Official Supplement of the S.I.M.A.—Dental Laboratories Section)

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THE
DENTAL PRACTITIONER
A Monthly Journal for the Practitioner and his Staff

Vol. III, No. 8 April, 1953

EDITORIAL

SPRING CLEANING

At this time of year many homes are disrupted by the annual event of spring cleaning. The cobwebs of the winter are swept away and preparations are made to hail the forthcoming summer. The winter of 1952–3 has been a trial of strength to many people and destruction has left its mark in numerous places. This would seem to be a better time to make new resolutions than at the New Year, when the cold of winter is upon us. Perhaps we would keep them longer if it wasn't that another factor rears its ugly head in April. It is the end of the financial year and the Budget looms ahead of us with optimism and pessimism arguing the toss. Being mere mortal creatures we therefore just hope for the best.

The idea of making new resolutions, the turning over of a new leaf, is in essence a spring cleaning of the mind. It is the decision to try to improve things, and is a question of moral courage. While the house and possibly the surgery and laboratory are being turned upside-down to remove the winter's pall, it might be a convenient moment to do a little spring cleaning on the mind of the dental profession. The outlook of the profession has become more and more materialistic during the last few years, in common, it must be admitted, with many other professions. It might be claimed that this has been forced upon us, but this is not necessarily true. There is a form of compromise in all things, as well as a sense of proportion. The more materialistic we become the greater the divorce between the patient and the dentist. Ethics are not based on a budget but on some intangible *je ne sais quoi* which cannot be computed in terms of money. It is dependent on our attitude to our fellowmen and our patients. That attitude is reflected back on the profession and can make or mar it. The individual who improves the patient-dentist relationship improves the whole of the profession. The pure materialist will not believe in this reasoning, as he must place a material value on everything, but those that do will find a deeper meaning in their work and will gain a spiritual value far beyond any material price.

SCHOOL DENTAL SERVICE
Ministers Receive Deputation

The Minister of Health (Mr. Ian Macleod) accompanied by the Minister of Education (Miss Florence Horsbrugh) and the Under-Secretary of State for Scotland (Commander T. D. Galbraith) received a deputation from the British Dental Association at the House of Commons on March 26. The purpose of the deputation was to discuss the present, and it is hoped temporary, difficulties of the School Dental Service.

There was a full exchange of views on the best way of securing an interim solution. Ministers promised to give careful consideration to all that has been said and to let the Association have their reply very shortly in the form of an official letter.

SOME USEFUL ACCESSORIES TO THE HYDROCOLLOID TECHNIQUE FOR INLAYS AND BRIDGES

By **E. L. HAMPSON**, B.D.S. (Liv.), H.D.D. (Edin.), F.D.S. (Eng.)

SINCE Sears in 1937 first suggested that dental surgeons should use hydrocolloidal impression materials for inlays and bridges many operators have adopted his methods. Those who have developed a systematic technique have saved themselves much time and their patients much of the discomfort which accompanied the earlier procedures. Many improvements have been made on Sears' original method, but too often the materials are carelessly manipulated and bad restorations are the result. Many workers, especially Thompson (1949), Phillips (1951), Mann, (1951), Skinner and others (1950), Dwight (1949), Rosenstiel (1950), and James (1949) have done valuable work towards establishing a standardized technique which is based on careful observations of the physical and chemical behaviour of the agar and alginate impression compounds. It is now intended to describe methods which have been devised to give more uniform results when elastic impression compounds are used in making inlays and bridges. Since a previous article (Hampson, 1950) dealt with the general details of the technique, only certain features will be discussed here.

From a study of the literature and from personal observations it seems that the agar-agar preparations are more often used than are the alginates in inlay and bridge work. Many workers believe that the agar compounds give results which are more accurate than those obtained with the alginates. I have used the alginates with a good deal of success, but research which is now being done points to the agar mixtures being slightly more accurate in their reproduction of detail. The zelex type of material is undoubtedly easier to handle by those who do not possess the special equipment necessary for the reversible hydrocolloid technique. It is certain items of this special equipment that will now be described.

Reversible hydrocolloids cannot be obtained in Great Britain. Before the Second World War Dentocoll was available, but operators in Britain can now only procure small supplies from persons who travel from here to America. Because of this shortage it has become necessary for dentists to manufacture their own hydrocolloids. After much experiment I have made a satisfactory mixture which gives good results clinically and satisfies all the requirements of the American Bureau of Standards except in the property of compressive strength. Its compressive strength is 1379 g. per sq. cm. instead of a minimum of 2000 g. per cm.[2]

The consistency of the mixture and instructions for preparation are as follows:—

10 g. agar-agar flakes	5 g. calcium carbonate
2 g. sodium sulphate	5 g. light kaolin
2 g. sodium benzoate	10 g. hard paraffin wax
92 c.c. of water	

The sodium sulphate and sodium benzoate are dissolved in water, which may need to be warmed. With this solution is triturated the calcium carbonate and kaolin. This must be done thoroughly to ensure complete dispersion. The agar flakes are now added and the mixture is allowed to stand for one hour. At the end of this time the sliced paraffin wax is put in and the whole mixture is enclosed in an airtight container which is autoclaved at a pressure of 10 lb. and kept at 100° C. for fifteen minutes. Instead of the autoclave a pressure cooker could be used to achieve the required temperature. Whilst the mixture is cooling it must be vigorously shaken to prevent the separation of the wax during the setting process. To colour the hydrocolloid a few drops of liquor azorubrum can be added, with some saccharine or oil of peppermint to flavour it.

The American Dental Association specification for hydrocolloidal impression materials states that:—

1. The material shall be uniform and suitable for taking impressions in the oral cavity or for reproducing dental models.

2. The material shall not irritate oral tissues and shall have a pleasant odour and flavour.

3. The material may or may not contain fibres, as specified by the purchaser.

General Requirements.—

1. The material shall impart a glossy surface to and separate cleanly from the hardened gypsum model.

2. The material shall become sufficiently plastic, when heated five minutes in a metal mixing syringe in boiling water or ten minutes in the original container, to permit removal from the syringe and container and to permit adaptation to the impression tray. After softening and during hardening of the material the ingredients do not segregate. The heated material shall be homogeneous, shall have a smooth surface, and be free from lumps or granules.

3. At temperatures comfortable to the oral tissues (109°–122° F.) the material shall be sufficiently plastic so that undercuts and fine anatomical details may be accurately reproduced. However, at these temperatures the material shall not run out of an inverted perforated metal tray such as is commonly used for hydrocolloidal impression materials.

4. *Temperature of Gel Formation.*—The temperature at which the plastic mass sets to a gel shall not be less than 95° F., nor more than 113° F.

5. *Strain in Compression.*—

a. The strain shall not be less than 4·0 nor more than 20·0 per cent between a stress of 100 g./cm.^{2} and a stress of 1000 g./cm.^{2}

b. The set shall not exceed 3·0 per cent when stresses of 100, 1000, 0, and 100 g./cm.^{2} are applied for one-minute intervals in the foregoing sequence.

6. Compressive strength shall not be less than 2000 g./cm.^{2}

The material described has been subjected to the tests suggested by the Bureau of Standards and all the specification are fulfilled except the one of compressive strength. Instead of the minimum of 2000 g. per cm.^{2} a figure of 1379 g. per cm.^{2} was obtained. This makes it necessary to take extra care in handling the impression, especially whilst stone is being poured into it. The practice of placing the filled impression on a heap of stone on the bench must never be allowed and all parts of the impression must be well supported. To one mixture rayon fibres were added. These did not affect the compressive tests but seemed to reduce dimensional change on storage of the impressions. Tests were made to study the accuracy of reproduction and the changes which might occur in different fixing solutions. The impressions were reasonably stable in 2 per cent sodium and potassium sulphate. During a period of ten minutes an expansion of 0·31 per cent was measured. This figure is similar to those given by the standard hydrocolloidal materials. The gelation temperature was 96° F.

All hydrocolloidal materials possess the very important property of hysteresis, which means that when the material liquefies or assumes the sol condition it does not harden to the gel until cooled to a very much lower temperature than is needed to liquefy it. In the case of agar compounds there is a lag of from 108° to 126° F. Because of this there is a good range of temperature in which the impression can be taken. To use the material near to its liquefying temperature would be dangerous and unnecessary. Much experiment has been done to ascertain the correct temperature at which the impression should be put into the patient's mouth. Dimensional stability tests show that the nearer the gelation temperature the material is used the more accurate are the results. The hydrocolloid is kept at a definite temperature for a definite time before it is used. This temperature varies with the manufacture of the material, and the one described earlier is kept at a temperature of 125° F. for ten minutes. This process is called "tempering", and results in a paste which is of uniform temperature, of good consistency, and viscous enough for it not to run out of the tray. To standardize this procedure special equipment is needed, and for this purpose a special heater has been prepared (*Fig.* 1).

The heater consists of three compartments which are heated by thermostatically controlled elements. The middle one is adjusted at 208°–212° F. and each of the others at 125° and 150° F. The hydrocolloid is first liquefied in the boiling water. The material can either be contained in a Dentocoll mixing gun or in a tube similar to those used to hold tooth-paste. About five minutes is needed to liquefy the hydrocolloid if the Dentocoll gun is used and twice that time if it is left in its original container. When the liquid state has been reached the gun or tube can be transferred to the storage bath at 150° F. till it is needed. Ten minutes in the tempering bath at 125° F. is allowed before the impression is taken. It will be remembered that one stage in taking the impression is injecting some of the compound

into the cavity, using an easily handled syringe. Different syringes have been used, but it has been found that metal ones lose the heat too quickly. This has been partly overcome by covering the barrel with a rubber sleeve. In America, however, non-metallic syringes are generally used and one of these which I have designed will be described.

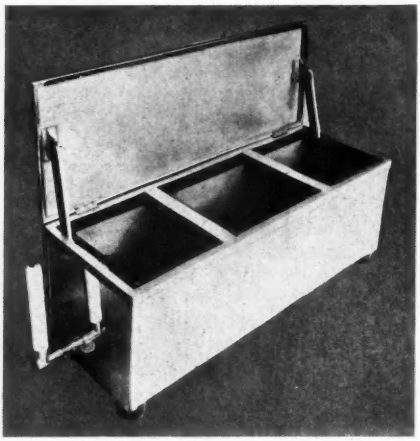

Fig. 1.—Special heater, divided into three compartments.

Fig. 2 A shows the syringe, which is about the size of a dental local anæsthetic syringe. It was turned from a laminated plastic called Tuffnol, a material which has better properties for this purpose than metal. It can easily be handled and is unlikely to burn the patient if it touches the cheeks or face. The plunger is made of brass, as is the small nozzle, which has a bore about 1½ mm. This can be filled by a special attachment to the Dentocoll syringe.

Fig. 3.—Impression tray which is not perforated. Composition stops are used instead to hold the hydrocolloid in position.

Another type of syringe first described by Sears (1937) is an adaptation of the standard cartridge syringe. The nozzle is modified by adding to it a length of 2 mm. stainless steel tubing, one end of which projects into the barrel of the syringe (*Fig.* 2 B) and into the glass tube when it is fixed in position. Empty local anæsthetic tubes are filled with hydrocolloid, sealed at each end with their rubber stoppers, and then placed in the syringe and liquefied in the liquefying bath for about five minutes. The tempering bath is usually missed by this small syringe because about 10° to 15° F. is lost as the material leaves the syringe. Its temperature is therefore lowered from 208° F. to 150°F. If tempering at between 120° and 130° F. is attempted with this small syringe, with its small bulk of hydrocolloid, a too viscous paste will result, which will gel before the main impression is taken and which will not unite with the main bulk of the material. Also the more viscous material in the impression tray will force the more liquid hydrocolloid further into the angulations of the cavity.

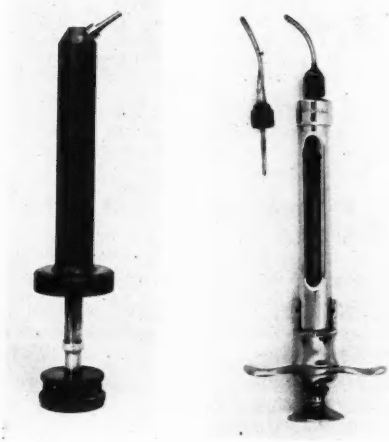

Fig. 2.—Types of hydrocolloid syringe.

Experiment and experience have proved that a more stable impression results when it is cooled at about 75° F. than when ice-cooled water at about 37° F. is used. Cooling usually

takes place in five to ten minutes. A tray (*Fig.* 3) with a metal tubing running around its edge is illustrated. By means of rubber tubing the metal tubes are connected into a water-supply adjusted at 70–75° F. This can be run around the tray so that it is efficiently cooled without filling the patient's mouth with water.

From the impression either a copper die or one of stone must be made. Although three methods of copper-forming hydrocolloids have been described by Dwight (1949), Rosenstiel (1950), and Hampson (1952), most operators still use artificial stone as their die material. Sometimes the impression material damages the stone surface and gives a chalky weak model. This has not happened with the recipe described earlier, as it contains sodium sulphate which is an accelerator of gypsum products. As a special precaution, however, the impressions can be soaked in a 2 per cent solution of either sodium or potassium sulphate for no longer than ten minutes before the stone is poured in.

Before the models are used they must be dried in gentle heat. Excessive heat must be avoided, and to this end Mann designed a drying oven which can be easily made from a tin about 9 in. by 9 in. by 9 in. in dimensions. It will be seen in the illustration (*Fig.* 4) that in the tin is a platform of expanded aluminium wire beneath which are two radiant heat lamps. In this oven the models are dried within an hour without danger to either their chemical or physical properties. This is a very simple but useful device which should be widely used in hydrocolloid work in England.

SUMMARY

The need for tempering hydrocolloidal impression materials has been stressed and a special heater has been described. A recipe for a reliable hydrocolloid has been given and two syringes described, together with a drying oven and an easily cooled impression tray.

Acknowledgements.—The author wishes to thank the staff of the Photographic Department of the United Sheffield Hospitals for preparing the photographs; Mr. A. B. K. Kesteven for his help in preparing the apparatus and laminated plastic syringe; and Professor G. L. Roberts for the kind interest he has taken in the work.

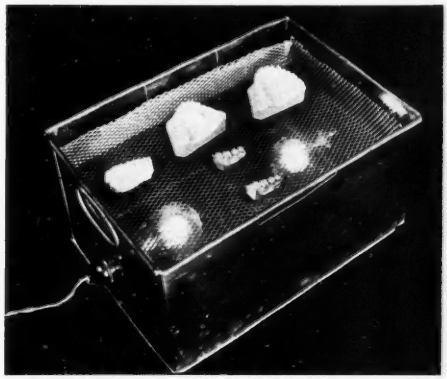

Fig. 4.—Drying oven for models.

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SUPPURATIVE OSTEOMYELITIS OF THE MANDIBLE

WITH PARTICULAR RELATION TO ITS INCIDENCE IN THOSE OF CHINESE RACE

(*Continued from page* 196)

By **WALTER C. ALLWRIGHT**, H.D.D. R.C.S. (Edin.), L.D.S. R.C.S. (Eng.), D.P.D.

BACTERIOLOGY

A variety of bacteria may usually be found in the pus and in the surrounding inflammatory tissues in cases of osteomyelitis. Most commonly found is *Staph. aureus*. Often *Staph. albus*, *Str. hæmolyticus* and *Str. viridans* may be present, and occasionally *Pneumococci*, *M. tetragenus*, *B. coli*, and typhoid bacilli.

Tratman (1934), in presenting his 14 cases of osteomyelitis of the mandible, notes that in 6 of the cases the Vincent's spirochæte and its accompanying fusiform bacillus were observed in great excess of the normal in direct smears taken from the mouth. He believes that it is probable that a simple but virulent Vincent's infection of the oral tissues, particularly around the mandibular third molar, is the immediate cause of the disease.

Mowlem (1944) points out that a specific organismal infection in osteomyelitis cannot be proved. It has been impossible to recover from the infected mandible any organisms which can be shown to differ from those present in the normal mouth. In his series of cases he has encountered hæmolytic streptococci and *Staph. aureus*, *Pneumococci*, *Str. viridans*, *H. influenzæ*, coliform bacilli, and a host of lesser Gram-negative organisms. All these, he writes, may occur in the normal mouth as well as in the infected jaw, and if their presence were the important factor, one might expect massive bone infection to follow almost every dental extraction.

RADIOGRAPHIC APPEARANCES

The X-ray is a valuable diagnostic and follow-up aid, but it is limited in its use for early cases of osteomyelitis because no bony change may be observed until seven to ten days after its onset. According to Mead (1946), in some cases a beginning periostitis or a beginning osteitis may be shown upon the radiograph within two or three days.

The first radiographic signs to be noted will be areas of slight radiolucency associated with a disturbance of the regularity of the bony trabeculæ. This irregularity may progress until in the late stage of the disease, the characteristic "cotton-wool" appearance is seen.

When the early stage of sequestration is forming, a greater opaqueness and thickening of the bone is observed. This is because the new periosteal bone is observed overlapping the sequestra. As the sequestra are thrown off they may be observed as irregular outlines detached from the normal bony contour.

The radiographic signs may be misleading in the chronic stage. Sometimes the only radiographic signs of sequestration are of detachment of fragments of the cortical bony layer. This may be found at operation to be much more serious than one would expect from the films. Conversely, the hazy shadows of bony sequestra may lie in such positions that one is led to expect pathological fracture when the amount of bony destruction is not great.

X-rays are most valuable for following the progress of the disease and of its healing. Any further sequestration after operation may be observed, and surgical action taken forthwith. Newly formed bone will not be at once radio-opaque, so that signs of firmness may be observed clinically one or two weeks before the first hazy X-ray shadows can be viewed.

BLOOD-SUPPLY OF THE MANDIBLE

Before examining the pathology of the disease, the blood-supply of the mandible should be considered.

The main nutrient sources are the two inferior dental arteries. These supply the body of the mandible and the lower third of the ascending ramus up to the points of entry into

the bone. The inferior dental artery is a branch of the internal maxillary artery and enters the mandible soon after its origin. It passes forward through the mandibular canal giving off branches to the teeth, and finally emerges from the mental foramen as the mental artery. Before so emerging, the inferior dental artery gives off the incisive branches which travel forward to supply the incisal teeth. The mental artery anastomoses freely with the submental and labial branches of the facial artery. From the mandibular canal extend arterial loop systems supplying the individual posterior teeth, with only poor anastomosis between the loops. Such anastomoses as exist play an important part in the development or walling-off of infection. If any loop system becomes blocked by thrombosis, the blood-supply of the particular portion of the bone supplied by that system is cut off, and necrosis may follow. Although anastomosis of the incisive branches of the inferior dental arteries with each other is to be expected, demonstration is not easy. Howkins (1935) carried out experiments on the mandibles of a dead pig, sheep, and monkey, and also on two human cadavers. By injecting methylene blue in turpentine via the inferior dental artery, he attempted to demonstrate the degree of anastomosis between the arteries of the two sides of the mandible. He found very little anastomosis within the bone, but found rather more staining in the lips and neighbouring area probably due to the free anastomosis of the mental and facial arteries. He came to the conclusion that as massive necrosis is not usual following fracture, in spite of the poor anastomosis across the midline, there must be an adequate vascular supply. He mentions the suggestion that this is assisted by an "antidromic" flow of blood through the mental foramen from the facial artery via the free anastomosis there. Howkins also quotes Euler (1922) who found that following the ligature of the inferior dental artery in young cats the jaw was as richly supplied with blood in two weeks' time on that side as on the unoperated side, owing, he considered, to the free anastomosis of the inferior dental, lingual, and facial arteries.

Pusitz and Mertz (1935) consider that there is a rich anastomosis of the inferior dental artery with the artery of the opposite side, which is the reason why sequestration in the anterior region is less frequent.

The upper part of the ascending ramus, including the coronoid and condyloid processes, is supplied with blood by a number of arterial branches derived mainly from the internal maxillary artery. According to Waldron (1943) this blood-supply has very slight collateral anastomosis with the blood-supply derived from the inferior dental artery.

The periosteal circulation is most abundant over all areas of the mandible except the upper part of the ascending ramus and the coronoid and condyloid processes, and is derived from numerous muscular and other arterial trunks in the vicinity.

PATHOLOGY

The essential element in the pathology of suppurative osteomyelitis is the interference with the vascular system to the part associated with invasion of micro-organisms, principally staphylococcal.

Mowlem (1944) describes the mechanism in the following words: "It is . . . suggested that thrombosis is the primary disaster. This may be caused either by direct trauma to the inferior dental vessels during the removal of a tooth, or by the central extension of thrombosis in the vessels supplying either a tooth root or the surface structures. Occlusion of the main vessels will create a large central area of bone of reduced vitality in which the secondary bacterial invasion is incapable of being withstood. It is obvious that the further back along the vessel this thrombosis extends, the greater will be the disaster, and clinical findings tend to bear this out." In support of his view that thrombosis is the primary cause, he makes the following points: "(*a*) Mandibular bone infection is rare after the extraction of incisor teeth, and in this area it is usually localized. As one goes further back along the tooth-bearing ridge, both the probability and the severity of infection increases. This variation would seem to be dependent upon anatomical consideration of the vascular distribution. (*b*)

The extraction of deciduous teeth is seldom followed by infection, not because of any difference in the bacterial flora of the mouth in early life, but because damage to the inferior dental vessels is unlikely. The roots of children's teeth are not in close approximation to the vessels, and may be separated from them by the upgrowing secondary dentition. (*c*) Osteomyelitis of the superior maxilla following dental extraction is almost non-existent. The blood-supply of this bone is segmental and vertical and is incapable, in its periphery, of complete occlusion."

With these general principles, so clearly put, the present writer is in agreement. With regard to the extraction of deciduous teeth, however, it must be pointed out that cases of osteomyelitis of the mandible in Chinese children are common in Hong Kong. The upgrowing secondary dentition does not always appear to form a barrier against the spread of infection as suggested by Mowlem. Rather the crypts of the developing teeth often provide convenient cavities for lodgement and spread of the infection. Cases are encountered where a subacute spread has taken place from the second deciduous molar forward through the crypts of the developing first premolar and canine, pus eventually pointing in the submental area.

The extent to which a progressive thrombosis of the main arterial trunk and of the arterial loop systems in the mandible may develop will depend upon two main factors: (1) the resistance of the local tissues in the path of infection; and (2) the facility of drainage of inflammatory exudate and pus. The resistance of the local tissues will be influenced by the type and virulence of the infecting micro-organisms and of the opposing antibodies. Poorly formed bone structure, and conditions of undernourishment and avitaminosis will, of course, favour the bacterial onslaught. With regard to drainage, this may be obtained naturally when pus burrows through the cortex and discharges into the mouth or through the skin, or may be obtained as the result of surgical treatment with incisions through the periosteum or holes drilled through the cortex and into the infected cancellous bone. Fortunately the cortical plate of the mandible is usually thin, and does not ordinarily provide much resistance to the suppurative process. Therefore the inflammatory exudate tends quickly to find a point of exit for spontaneous drainage.

Should drainage of exudates be unduly delayed, compression within the bone occurs. This may be so severe as to lead to thrombosis of the central arterial vessel which in turn will bring about necrosis of a large mass of bone. It is possible that the apparent readiness with which Chinese people develop massive necrosis of the mandible may be explained by an anatomic formation which delays the discharge of inflammatory exudates.

As soon as drainage is freely established, the acute phase of the disease subsides, and a walling-off of the infection occurs within the bone. The disease then subsides into a state of chronicity. The parts of the bone whose blood-supply has been cut off will necrose and will progressively liquefy into pus. Concurrent with this breakdown occurs the process of repair. The periosteum, in spite of having been separated from the bone by the pus discharge, has great powers of resistance, and its osteogenic cells begin to lay down new bone on the inner surface of the membrane. This process usually commences before exfoliation of the sequestrum is accomplished. Occasionally, the new bone is laid down in the form of an "involucrum" or envelope enclosing the necrosed bone to such an extent that some of the new bone must be removed to make room for delivery of the sequestrum. This is easily carried out as the new bone is usually coarse and poorly formed.

Without surgical interference the discharge of pus may continue for a considerable time, and numerous small sequestra may be thrown off from time to time into the mouth or externally through fistulæ. The bony sequestra are hard, rough, and often stained dark brown or blackish.

The blood-picture is of importance. In the acute stage the white cells may rise in number to as much as 20,000 per c.mm. In the chronic stage there may be only a slight rise in the white count, which will increase if a subacute condition supervenes to 10,000 per c.mm.

(To be continued in a subsequent issue.)

CRITICS' CORNER

(Under this heading we print letters which discuss points arising from articles which have appeared in previous issues.)

Feb. 12, 1953.

To the Editor.

Dear Sir,

The articles by Dillon in the issues of November and December, 1952, report some purely laboratory experiments, from which sweeping claims about the effects of fluorine on living dental tissues, and on human health generally are made. To argue directly from the test tube to real life is never wise in biological science, especially when the argument is extended to the urging of certain actions in the sphere of human health and welfare. Apart from the nature of his arguments some of Mr. Dillon's "facts" require comment.

1. From a few experiments *in vitro*, he claims to prove a loss of phosphate when powdered teeth are treated with a solution of sodium fluoride. Since no determinations of phosphate were made these experiments are inconclusive. McClure (1950) studied whole teeth, as opposed to powdered teeth and bone, and showed that an eight-fold increase in enamel fluorine was not accompanied by any corresponding change in ash, calcium, or phosphorus.

2. "If there are not sufficient calcium ions present in the water to balance the amount of sodium fluoride added, then the toxic effect attributable to sodium fluoride will be present to a degree." It is difficult for a chemist to follow Dillon's argument, which seems to be based on a misconception of the electrochemical theory. However, even if his argument were valid, it would have little practical importance, for drinking waters in which the fluoride ion exceeds the calcium ion are virtually unknown.

3. Dillon gives a method of determining the "toxic part" of the total fluoride content of water. Whatever "toxic part" may mean, the method of determining it is valueless. The West Hartlepool water he uses is very hard and contains magnesium. Evaporation with caustic soda will soften it and such softening of a magnesian water is an established method of removing fluoride. The amount of fluoride he eventually extracts as his "toxic fraction" will depend on the amount of soda originally added and on the conditions of the experiment. It is, of course, known that this particular water contains above the optimum amount of fluoride and such a concentration would never be artificially made.

4. Dillon analyses 20 "decayed teeth" from different parts of Scotland and is surprised that caries was present despite a high fluorine content in some of the teeth. It is not disputed that caries occurs in areas where fluorine is present in the water. Fluoridation has been found to reduce the incidence of caries but it is not claimed that it eliminates caries (*Survey of Literature of Dental Caries*, National Research Council (Pubs. 225) Washington, D.C.). It would be simple to demonstrate any given level of caries among a fluoride-consuming population by selecting a few individual carious teeth.

5. "The reported reduction of juvenile caries rate is inseparably connected with mottling." This is not true. Apart from experience in America, Forrest and Parfitt (1951) in this country found no mottling whatever in pre-school children amongst whom a greatly reduced caries incidence was demonstrated as well as an increased number of caries-free mouths. In children of school age amongst whom caries incidence was reduced by about half, a small proportion only showed a "very mild" mottling. Such very mild mottling is evident only on expert examination and as stated by Weaver (1950) would not be noticed during conversation.

6. "Far from considering the problem of a dose which is to be deposited on teeth the advocates of fluorination have not even paid it the passing compliment of a nod. . . ." In fact this point has been considered (Jenkins, 1952).

7. "The accumulative effect of the 'medicine' has not been adequately considered, nor can it be assessed without further studies directed to that end alone." It depends on what is meant by "adequately", but in fact, a great deal of research has been and is being done on this very point (Cox and Hodge, 1950; Halleboe and Ast, 1951).

8. "The scientific possibility of *subtraction* apparently has occurred to no one." In fact, excess fluoride which has been shown to produce mottling is being removed from at least two water supplies in the United States, and the possibility of reducing harmful levels of fluoride by dilution with a fluoride-free water or by chemical methods is well known.

9. "If a concentration of 0.55 p.p.m. F *not balanced by calcium* reaches the blood-stream in the vicinity of bone, a reaction will take place and both calcium and phosphorus metabolism will be fundamentally upset." Fluoride ions reaching the blood-stream will circulate along with serum calcium, which can only become seriously lowered in somewhat rare pathological conditions; and it is difficult to see how the "balancing" mechanism can affect the issue at all. In point of fact, no fundamental upsets of calcium and phosphorus metabolism have been demonstrated in any community drinking water containing fluorides at the levels recommended by the advocates of fluoridation.

10. "Bone appears to the author to be the detoxifying centre for fluorine, just as the liver is the detoxifying station for many poisonous substances." The analogy is inexact and misleading, since deposition of fluoride in bone does not change a harmful substance into a harmless one, i.e., detoxicate it.

11. "Perhaps if it was not for this detoxifying function of bone, calcium-precipitating fluorides would pass through to the placenta and the infant mortality-rate in an endemic fluorosis area might be so alarmingly high as to deter altogether any thought of fluorination." This opinion may be wishful thinking on the part of one who obviously thinks fluoridation to be undesirable. But it must be noted: (*a*) that unexpectedly high infant mortality-rates have *not* been noted in areas of endemic fluorosis, and (*b*) that fluoridation at the level of about 1.0 p.p.m. does not produce endemic fluorosis, i.e., widespread manifestations of fluorine intoxication.

We bring these points to notice because the decision whether or not to fluoridate waters in this country should be based on accurate facts and sound reasoning, and should not be influenced by optimistic enthusiasm on the one hand nor by alarmist opinions on the other.

Yours sincerely,

GILBERT J. PARFITT, F.D.S., M.R.C.S., L.R.C.P.
J. LONGWELL, D.Sc., F.R.I.C.
A. M. THOMSON, B.Sc., M.B., Ch.B.

Eastman Dental Hospital,
Gray's Inn Road,
London, W.C.1.

PARLIAMENTARY NEWS

School Dental Service

Miss Florence Horsbrugh, the Minister of Education, was accused by Mr. J. Baird (Lab., Wolverhampton) of "deliberately misleading" the House of Commons Standing Committee when on a previous occasion it discussed the School Dental Service.

The committee was considering the Education (Miscellaneous Provisions) Bill.

Moving a new clause dealing with interim arrangements for school dental treatment Mr. Baird said that the last time the committee discussed the subject Miss Horsbrugh must have had certain information which could have helped the committee but she did not disclose it.

"As I see it, we were told by the Minister that local authorities wanted dentists urgently to treat children, and the suggestion was that the money was there to pay the dentists' salaries, and the clinics were there in which the treatment could be carried out.

"She made it clear that if she could not get full-time dentists she was willing to employ them part-time on a sessional basis. When the British Dental Association made an offer to the Minister some short time ago the Parliamentary Secretary to the Ministry of Health was quite scathing and really did not treat the matter seriously."

He continued that the B.D.A. had sent a letter to local dental committees of the National Health Service advising dentists to offer their services part-time in the school clinics; 341 dentists had already offered their services part-time. Of them, 37 had been accepted, 236 had been turned down by the local authorities and their services refused, and in the cases of 68 the decisions were pending.

The fact was that the local authorities would not provide sufficient capital to build up an efficient dental service, and he urged as "the only solution" that it should be taken away from the Ministry of Education and passed to the Ministry of Health.

"Children's teeth are being allowed to decay to prove the doctrinaire attitude of the Minister of Health, that if you impose dental charges you will get dentists back into the School Service."

Miss Horsbrugh said that when the Minister of Health met a deputation from the B.D.A. to discuss the problems of the service she would be present.

"If he will give me the facts about any local authority which has said it cannot employ dentists because it has not the money to pay them I will certainly look into it", she added.

Capt. T. F. Peart (Lab., Workington) told the committee: "My information is that local authorities have refused 236 offers of part-time work. The single fact is that some local authorities are not anxious to do anything in the matter".

He described Miss Horsbrugh as "a grey shadow over the School Dental Service".

The Rev. Ll. Williams (Lab., Abertillery) thought Mr. Baird "unnecessarily aggressive" in his speech. He said that some local authorities had had very fine School Dental Services disrupted and broken up.

"I cannot stand hypocrisy. The solicitude for children's teeth was put to the test a few years ago when the then Minister of Health, Mr. Bevan, made it possible for these fantastic remunerations to be received by dentists. That tested their solicitude and proved that many dentists were more self-centred than public spirited.

"It is a remarkable thing that all these protestations of love and affection for children's teeth should occur since the introduction of dental charges."

Mr. W. Keenan (Lab., Kirkdale) said: "One of the tragedies of the inauguration of the free dental service was the fact that the school clinics actually collapsed". Dentists left them because they could earn four times as much in private practice.

Miss Horsbrugh intervened to say that the number of local authorities to whom offers of service had now been made was 131, involving 300 out of 583 dentists.

The committee divided and the proposed new clause was rejected by 20 votes to 13. (*F., Feb.* 27.)

THE PROCEEDINGS OF THE BRITISH SOCIETY OF PERIODONTOLOGY

President : G. H. LEATHERMAN, F.D.S. R.C.S. Eng.

Hon. Secretary: H. THOMSON, L.D.S. R.F.P.S. Glasg., H.D.D. R.C.S. Edin.
53, Portland Place, London, W.1.

Vol. III, No. 5 April, 1953

SOME PATHOLOGICAL CHANGES ASSOCIATED WITH ENLARGEMENT OF THE GINGIVÆ

By **E. DESMOND FARMER**, B.A., M.D.S., F.R.S. R.C.S.

Lecturer in Parodontal Diseases, University of Liverpool

THE most common changes associated with enlargement of the gingivæ are the inflammatory changes resulting from different forms of irritation. There are, however, other changes that can cause an increase in the size of the gingivæ, and Glickman (1950) classified them under the following headings: (1) Inflammatory; (2) Non-inflammatory hyperplasia; (3) Combined, which is a combination of (1) and (2); (4) Conditioned which includes the enlargements associated with certain hormonal disturbances, blood dyscrasias, and vitamin deficiencies; (5) Neoplastic; and (6) Developmental gingival enlargements associated with the eruption of teeth.

Hine (1952) considered that from the clinical point of view cases of gingival enlargement may be of two general types, which he called (1) inflammatory hyperplastic gingivitis, and (2) fibrous hyperplasia of the gingivæ. This classification does not include those enlargements associated with the blood dyscrasias, and it is proposed to use Glickman's classification as the basis of this paper, but to limit it to a discussion of the conditions found under the first four headings.

1. Inflammatory Gingival Enlargement.—The inflammatory process has been shown by many workers to present a similar series of changes whatever tissues are involved. Menkin (1940, 1945, 1950) showed that the breakdown products of the tissues were primarily responsible for initiating the phenomenon of inflammation, and his work was described in relation to the gingival tissues by Nuckolls and Rule (1947). The ultimate result of the inflammatory changes depends on the duration and severity of the irritation and upon the local and systemic resistance of the patient. Clinically the gingivæ may be firm, dense, resilient, normal in colour or slightly paler, insensitive, and not easily traumatized, or they may be swollen, soft, œdematous, hyperæmic and red or reddish-blue in colour, sensitive to touch, bleed easily, and lack the normal stippled appearance; or they may be at any intermediate stage. The reaction may be localized to the interdental papillæ, in which case the enlargement may be described as papillary; or, the gingival margins may also be involved, in which case the condition may be described as marginal.

Histopathology.—When the gingivæ are clinically firm and resilient in character, the epithelium is usually well keratinized. The thickness of the epithelium may be slightly increased and the epithelial prolongations into the underlying connective tissue may become fused and irregular in outline. There is some inflammatory cellular reaction to be found in the underlying connective tissue, which consists mainly of mature fibrous tissue with a moderate increase in the number of capillaries. Where the gingivæ are swollen, red, soft, and they bleed easily, the outer epithelium is poorly keratinized and may show parakeratosis with nuclei present in the cells of the outer layers of the epithelium. The subgingival epithelium shows marked œdematous infiltration, is frequently ulcerated, and within the epithelial cells polymorphonuclear leucocytes may be found. There is a marked

inflammatory reaction beneath the subgingival epithelium frequently extending throughout the whole corium, the inflammatory cells being either localized in groups or spread more evenly between the fibres. Collections of fluid are seen between the fibres of the connective-tissue bundles, which are often destroyed.

The increase in size of the gingivæ resulting from inflammation is mainly due to the infiltration of fluid and inflammatory cells into the area, together with an increase in the number of capillaries and their accompanying fibroblasts. As the inflammatory reaction subsides mature fibrous tissue is formed, but, according to Goldman (1952), when repair takes place the new fibres that are formed are no longer arranged in the orderly fashion found in the normal gingivæ.

The relative amount of fluid and fibrous tissue present as a result of the inflammatory process controls the clinical appearance of the gingivæ and also to a certain extent the treatment of the case. Where there is much œdema present conservative methods of treatment are likely to produce a better result than when much fibrous tissue is present.

Metabolic and histochemical investigations of normal and inflamed gingivæ have not as yet produced any significant results. Glickman, Turesky, and Manhold (1950) showed that there was an increase in the oxygen consumption of healing gingivæ. Turesky, Glickman, and Litwin (1951) found that there was a reduction in the glycogen content in inflamed connective tissue, but that there was an increase in the glycogen content of the epithelium overlying the inflamed area. They also showed that, in addition to the normal distribution of alkaline phosphatase in the endothelial cells, there was an increase in the alkaline phosphatase content in the basement membrane of the epithelium, in the inflammatory cells, and in the fibroblasts in the inflamed areas. Using the technique of Gomori (1939), the observations of these workers on the distribution of alkaline phosphatase in inflamed gingivæ have been confirmed. The presence of alkaline phosphatase in inflammatory cells but not in the normal lymphocytes present in the blood-stream (Wachstein, 1946), suggests that it has attained this position as a result of simple mechanical diffusion phenomena associated with circulatory alterations rather than in a specific role.

2. Non-inflammatory Hyperplastic Gingival Enlargement.—This may be marginal or diffuse. The marginal type is usually associated with "epanutin" or "dilantin sodium" therapy, while the diffuse type is frequently described as hereditary or idiopathic gingival fibromatosis. The origin of the latter is uncertain, it arises from the gingivæ, grows slowly and may reach a very large size. It is composed mainly of mature fibrous tissue not arranged in any definite pattern, with little or no inflammatory cellular infiltration and it is covered with well-formed epithelium.

The Marginal Type of Non-inflammatory Hyperplastic Gingival Enlargement. — In a review of the literature Reader (1950) pointed out that the incidence of gingival enlargement reported in patients treated with epanutin varies from 2 per cent (Butter, 1940) to 62·5 per cent (Frankel, 1940). Stern, Eisenbud, and Klatell (1943) showed that the longer the treatment was given the greater was the enlargement and also its incidence. Macfarlane, Baxter, and Mitchell (1942), found that 33 per cent of cases in the early stages and 55 per cent after one year's treatment showed gingival enlargement.

Esterberg and White (1945) found that there were 25 per cent more cases of gingival enlargement among patients who were abnormally dark and hairy, but Reader (1950) concluded that there was no correlation between the formation of the enlarged gingivæ and the age, sex, weight, and height of the patient, the duration of treatment received, the degree of therapeutic effectiveness of the dose or the size of the optimum dose, but rather that the gingival response varied with the individual sensitivity to the drug.

Local irritation is thought to play a part in the origin of the condition, and Ziskin, Stowe, and Zegarelli (1941) considered that local stasis in the subepithelial capillaries, resulting from inflammation, enables the epanutin or dilantin sodium within the blood-stream to produce the hyperplasia. Esterberg and White (1945)

considered that endocrinal disturbances form the background of a great number of cases, but they could not identify any particular hormone. Staple and Emslie (1952) considered that the enlargement is an exaggerated response to local stimulation. They concluded from their experiments on mice that the effect of epanutin on both the central nervous system and on the gingivæ is explicable on the basis of an alteration in the activity of the pituitary-adrenal complex.

Fig. 1.—Epanutin enlargement. The papillæ have increased in size, and where they meet a cleft is formed. The exaggerated stippling of the gingivæ is very obvious in this case.

King and Gimson (1947) and King (1952), who were able to produce enlarged gingivæ in ferrets when the latter were given epanutin while being fed on a soft diet, found that if the ferrets were encouraged to gnaw pieces of bone when the enlargement was in the early stages, the gingivæ returned to their normal size, and that if the gingivæ were given adequate stimulation throughout, no changes could be seen clinically.

It appears from these observations that epanutin renders the gingivæ more susceptible to irritation and to the lack of proper stimulation.

Clinical Appearance.—This has been described by Glickman and Lewitus (1941), Robinson (1942), Esterberg and White (1945), Ziskin, Stowe, and Zegarelli (1941), Stern, Eisenbud, and Klatell (1943), and others. The enlargement is usually painless and the earliest sign is an increase in the normal stippling of the gingivæ which develop a granular appearance. This is followed by an increase in the size of the gingival papillæ forming a triangular-shaped mass. When the individual papillæ become large they come in contact with the adjacent papillæ and a cleft is formed (*Fig.* 1). There may be an increase in size of both the papillæ and the margins of the gingivæ forming a roll of tissue. The colour of the enlarged gingivæ is usually normal unless traumatized and inflamed, in which case the colour becomes reddened and the stippled appearance is lost (*Figs.* 2, 3).

Histopathology.—Glickman and Lewitus (1941) found that an early recurrent lesion was composed mainly of capillaries and young fibrous tissue with no inflammatory cells, suggesting the lack of inflammatory origin. King (1952) found that the enlarged gingivæ seen in ferrets fed on epanutin pass through the following stages: There is an even proliferation of epithelium into the underlying connective tissue involving the whole of the gingival mucosa. The epithelium tends to occlude the intra-epithelial prolongations of connective tissue and cause vasodilatation of the included capillaries producing the clinical

appearance of strawberry-mottling. There is vasodilatation and perivascular fibrous proliferation within the corium. If there is insufficient stimulation to the gingivæ these more vascular and continues to proliferate, growing out from the main body of the gum tissue, and in the ferret forms an extensive growth towards the crown of the tooth.

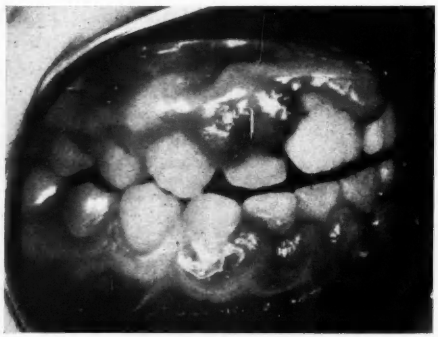


Fig. 2.—A case treated with epanutin for six months. There was an anterior open bite and the patient was a mouth-breather. The gingivæ in the anterior region were enlarged, but posteriorly on the right side they were almost normal.

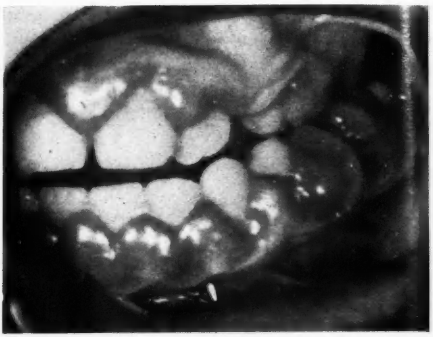
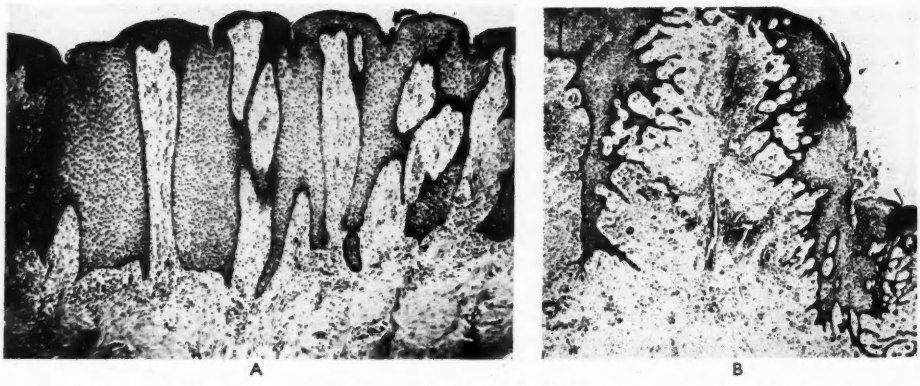


Fig. 3.—*Case* 1. Showing the marked enlargement associated with irritation from a badly carious right lower five and from the poor occlusal relationship.



A B

Fig. 4.—A, Biopsy specimen taken from a patient receiving epanutin therapy, the epithelium shows parakeratosis and marked acanthosis. There is very little inflammatory cellular infiltration in the underlying connective tissue and the capillaries entering the intra-epithelial papillæ of connective tissue are almost normal in appearance. (× 35.) B, Shows a small lobule with a central core of fibrous tissue and a central blood-vessel, together with some accompanying inflammatory cells. (× 22.)

changes progress. The epithelial prolongations join and grow down into the underlying connective tissue, but some of the surviving corium containing blood-vessels and young fibroblasts eventually forms a peduncle, while the centre of the epithelial prolongation degenerates to form a crack. The central core tends to become Secondary peduncles are frequently formed near its base.

According to King's interpretation of his findings it would seem that the epithelial downgrowth into the underlying connective tissue is the primary factor, while the connective-tissue proliferation is a secondary factor

in the formation of the enlargement. Staple and Emslie (1952), from their observations on alkaline phosphatase activity within the connective tissue, considered that the alkaline phosphatase may be responsible for the connective-tissue response, but from their examination of the epithelium, where no increased enzyme activity was found, they considered that the epithelium was also involved.

The histological appearance of the tissue changes described by King in the ferret may be found in the gingivæ of human beings under treatment with epanutin, but it is by no means certain whether the earliest changes take place in the epithelium or in the connective tissue. It appears from the sections examined that, although there may be a slight increase in the thickness of the epithelium, the enlarged gingivæ are composed mainly of mature fibrous tissue. (*Figs.* 4–6.)

The treatment of this condition is not very satisfactory if the drug is continued. Surgical removal of the tissues usually results in a recurrence of the growth, which may be retarded if it is followed by adequate conservative treatment and the removal of all forms of irritation. Withdrawal of the rug causes the gradual, but not necessarily the complete, reduction in the size of the enlargement (Glickman and Lewitus, 1941).

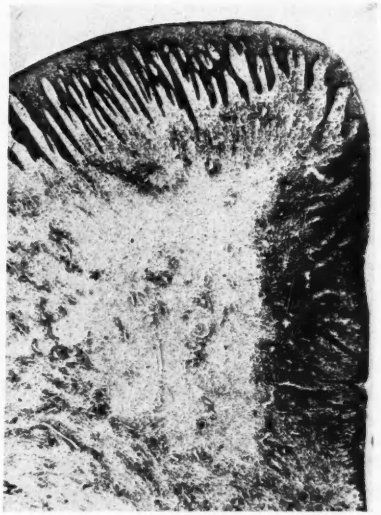


Fig. 5.—A lobule from a case of epanutin enlargement showing epithelial prolongations into the underlying connective tissue. The irregularity of these prolongations is particularly marked where there is an increase in the number of inflammatory cells in the connective tissue as seen on the right of the picture. (× 22.)

3. Combined Gingival Enlargement.—In this category Glickman (1950) included the conditions classified as hyperplasias complicated by inflammatory changes. It is useful from the point of view of treatment. For example, a gingival enlargement associated with epanutin therapy will show very little reduction in size after conservative treatment, but if complicated by inflammatory changes, the conservative treatment will reduce the inflammation and to some extent reduce the size of the gingivæ.

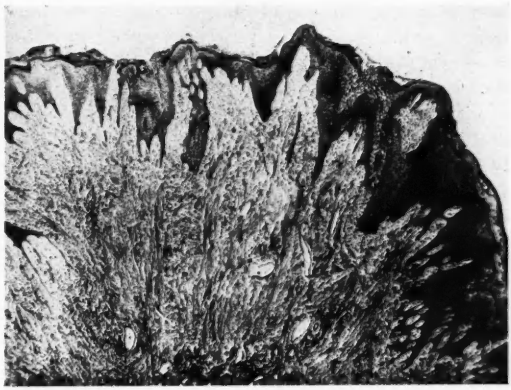


Fig. 6.—Specimen from the case seen in *Fig.* 1 showing the hyperkeratinization of the irregular epithelium. In this section the strands of fibrous connective tissue within the corium can be seen extending into the intra-epithelial connective-tissue papillæ, suggesting that possibly the epithelium is being pushed outwards. (× 12.)

4. Conditional Gingival Enlargement.—This includes those enlargements usually regarded as being produced by irritation, but owing to some systemic factor there is an exaggerated response by the tissues. The systemic factors rendering the gingival tissues more susceptible to irritation include certain endocrinal

disturbances, blood dyscrasias, and vitamin deficiencies.

It is not intended to discuss the pathological changes associated with all these conditions but merely to describe some of the changes in the gingivæ found associated with pregnancy, puberty, and with the leukæmias.

Hormonal.—

a. Pregnancy: The enlargement of the gingivæ associated with pregnancy may be marginal, involving most of the gingivæ, or it may be discrete and tumour-like.

A gingivitis may only be regarded as being caused by the endocrinal changes associated with pregnancy when it subsides completely, or almost completely, after the termination of the pregnancy. Of the limited number of cases of pregnancy gingivitis fulfilling this condition, and from which biopsy specimens have been taken, there have been very few changes that could be regarded as being characteristic of a pregnancy gingivitis. The histopathological changes have been similar to those found in inflammatory enlargement, except that possibly the vascularity has been somewhat greater and the epithelium appears to be more fragile. This is in marked contrast to the so-called pregnancy tumour which cannot be distinguished histologically from a capillary hæmangioma.

b. Puberty: The gingival changes associated with puberty are usually brought about primarily as a result of an exaggerated response to irritation. Ziskin (1941) has shown that there is enlargement of the gingivæ in humans undergoing treatment with œstrogen and testosterone, and the gross enlargement sometimes associated with puberty is possibly connected with some gonadal dysfunction.

In cases of gingival enlargement found in adolescents at about the ages of 12–14 or even later, the enlargement may be very great indeed. A frequent form of irritation is mouth-breathing.

In one case the mouth-breathing was treated and cured with a mouthscreen and a gingivectomy was carried out. The patient was very conscientious with the maintenance of her oral hygiene, but after a short time the gingivæ started to enlarge and within eleven months a further gingivectomy was required. Biopsy of this new tissue showed much epithelial and fibrous proliferation and some inflammatory infiltration, with a marked increase in vascularity at the base of the tissue.

The histopathological appearance of the tissues examined from other cases varied from tissue composed mainly of immature fibroblasts to that of a typical chronic gingivitis. It is doubtful if these histological changes can be regarded as being in any way specific.

Leukæmia.—Changes in the gingivæ associated with the blood dyscrasias, particularly the leukæmias, have been reported by many investigators. The work of Clough (1932), Love (1936), Osgood (1937), and Barnfield (1945) showed that gingival bleeding and ulceration are more common among the acute than among the chronic leukæmias, and especially among the monocytic types. Resch (1940), in an interesting report, found that in 27 cases of monocytic leukæmia 50 per cent had gingival enlargement and 30 per cent had ulceration and necrosis of the gingivæ; in 68 cases of myelogenous leukæmia 15 per cent had oral symptoms; and in 77 cases of lymphatic leukæmia 10 per cent had oral symptoms. He found that while enlargement of the gingivæ was more common in the monocytic and lymphatic leukæmias than in the myelogenous leukæmias, it more frequently progressed to necrosis in the monocytic types. Stoy (1952), reviewing three cases of acute monocytic leukæmia without marked gingival changes, considered that if the gingivæ were healthy before the onset of the systemic condition it was unlikely that gingival manifestations would result, and that the local conditions were the more important contributory factors in the aetiology of the gingival lesion. Matheson (1949), presenting three cases of acute monocytic leukæmia and one case of acute lymphatic leukæmia with oral symptoms, pointed out that the low number of platelets in these cases, which is a frequent feature of the terminal stages of many of the acute conditions, is probably responsible for the hæmorrhagic symptoms. Resch (1940), however, considered that neither the oral neglect nor

the low platelet count could account entirely for the oral manifestations where these were present. He found that in two cases of monocytic leukæmia, in 25 per cent of cases of lymphatic leukæmia, and in most of the cases of myelogenous leukæmia there was evidence of gross oral neglect, but there were no oral symptoms of the systemic condition.

Fig. 7.—*Case* 1. Acute lymphatic leukæmia. Photomicrograph of an autopsy specimen showing the interdental papilla and alveolar bone situated between $\overline{6}$ and $\overline{7}$. (× 15·5.)

Three cases of leukæmia are presented in this paper.

Case 1. **Acute lymphatic leukæmia.** Female, aged 14. On examination the patient was pale and listless, the tongue was pale, and the gums normal. There were small submandibular lymph-nodes, but no other nodes were enlarged. There was some swelling and pain in the joints, and there were widespread petechial rashes especially on the limbs. There was some epistaxis before death.

Blood-count (11 days before death).—Red blood-count 3,690,000 ml.; Hæmoglobin 9·2 gr./100 ml.; White blood-count 1,800 ml., Lymphocytes 47 per cent, Lymphoblasts 11 per cent. *Sternal puncture*: 98·2 per cent lymphoblasts.

At post-mortem it was found that there was extensive leukæmic infiltration of the spleen, liver, kidney, and suprarenals, and there was uniform leukæmic infiltration around the bronchi and pulmonary arteries in the lung.

The specimen obtained at post-mortem seen in *Fig.* 7 showed that leukæmic cells occupied most of the alveolar marrow spaces and had penetrated the circular fibres via the blood-vessels into the corium of the gingival tissue (*Fig.* 8). Although there was some infiltration of the leukæmic cells into the gingivæ, it will be seen that it was very little in comparison to the infiltration found in the case of acute myeloid leukæmia, which presented marked oral signs and symptoms. (*Fig.* 9.)

Fig. 8.—*Case* 1. The interdental papilla showing a moderate infiltration of leukæmic cells. (× 68.)

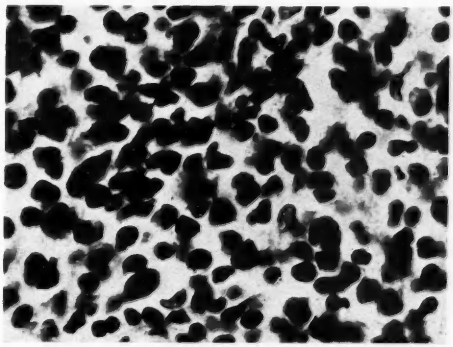


Fig. 9.—*Case* 1. Photomicrograph showing the cells seen within the connective tissue of the interdental papillæ. These cells appear to be mostly lymphoblasts and lymphocytes in varying stages of maturation. (× 633.)

Case 2. **Chronic lymphatic leukæmia.** Male, aged 65. Patient developed a painful patch on the anterior pillar of left fauces five days before presenting for treatment.

There were no other previous symptoms except slight weakness for about nine days.

On clinical examination the patient was found to be pale. The pain seemed to be focused in the left ear and on the left side of the face. There was a large adherent fibrinous mass attached to the ulcerated area of the anterior pillar of the left fauces. Submandibular glands were enlarged. Temperature 101·5°.

Fig. 10.—*Case* 3. Acute myeloid leukæmia. A photomicrograph of an autopsy specimen, showing the infiltration into the marrow spaces and gingivæ by leukæmic cells. (× 4.)

Blood-count (2 months before death).—Red blood-count 2,000,000 ml.; Hæmoglobin 6·8 gr./100 ml.; White blood-count 98,000 ml., Lymphocytes 93 per cent, Polymorphonuclears 6 per cent, Monocytes 1 per cent, Platelets 180,000 ml.

Treatment with nitrogen mustard reduced the white-cell count to about 20,000 ml., but shortly before the patient died the condition rapidly deteriorated, the white count increased and the platelets dropped to 60,000 ml. During the terminal stages the oral condition deteriorated, but the gums remained almost normal.

Case 3.—**Acute myeloid leukæmia.** Female, aged 28. The patient had a history of seven days' hæmorrhage after a dental extraction six months previously. On examination the patient was pale and showed numerous bruises, especially on the upper limbs. There was gross oral sepsis, with bleeding from the gums, which were swollen, reddish-purple in colour, and showed patches of ulceration.

Blood-count (12 days before death).—Red blood-count 1,920,000 ml.; Hæmoglobin 6·6 gr./100 ml.; M.C.V. 108 c.μ; White blood-count 23,000/ml., Lymphocytes 26 per cent, Monocytes 11 per cent, Promonocytes 25 per cent, Monoblasts 35 per cent; Platelets 11,000 ml.

Sternal puncture tended to confirm the diagnosis of acute monocytic leukæmia. At post-mortem the bone-marrow was found to contain many early myelocytes and a diagnosis of acute myeloid leukæmia was made. There was found to be leukæmic infiltration into the lymph-nodes, spleen, suprarenals, and connective tissue of the liver, with slight infiltration of the kidneys and heart. The post-mortem specimen taken from the mouth (*Fig.* 10) showed that the leukæmic cells were present in large numbers in the marrow spaces of the alveolar bone (*Fig.* 11) and that they had penetrated into the part of the

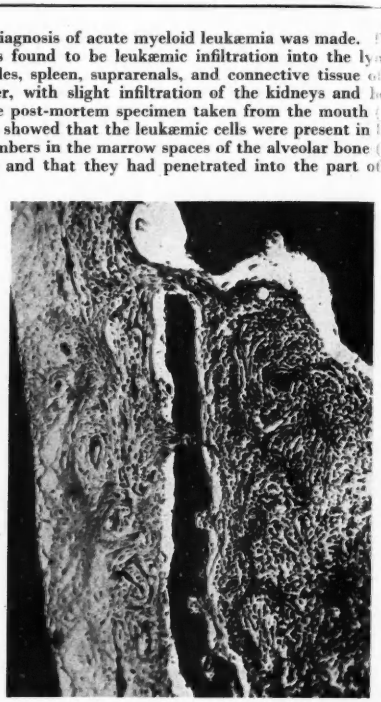


Fig. 11.—*Case* 3. Showing a part of the tooth, the periodontal membrane, and the bone-marrow. The leukæmic cells in the bone-marrow can be seen infiltrating into the periodontal membrane. (× 74.)

periodontal membrane nearest to the bone. The enlarged gingivæ were packed with leukæmic cells (*Fig.* 12) and in many areas the epithelium had been lost. The loss of epithelium was accompanied by very little inflammatory cellular reaction (*Fig.* 13), possibly because the capillaries supplying the area were so tightly packed with leukæmic cells (*Fig.* 14) that they were unable to provide the defence cells required, even if these were available.

Burket (1944) considered, in the case of monocytic leukæmia he reported, that the areas of necrosis of the gingivæ were due to thrombus formation within the blood-vessels supplying the area. In the case of myeloid leukæmia presented in this paper no evidence of thrombus formation was found in the many sections examined, but as can be seen in *Fig.* 14 the capillaries were well packed with leukæmic cells. It is possible that this form of blockage may be partly responsible for reducing the supply of blood which has a low hæmoglobin content and therefore a low oxygen content, and thereby resulting in necrosis of the area supplied.

DISCUSSION

In this paper some of the changes associated with enlargement of the gingivæ have been presented. Such changes have frequently been

classified under the heading of gingivitis, hyperplasia, or hypertrophy. The term hypertrophy, meaning the increase in size of the tissue due to an increase in the size of the cells, is obviously a misuse of the term and it is gradually being replaced by hyperplasia. This

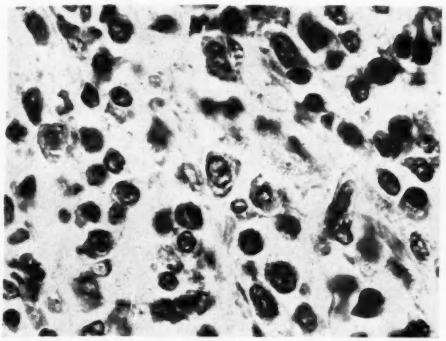


Fig. 12.—*Case* 3. Showing leukæmic cells present in the connective tissue underlying the subgingival epithelium. The leukæmic cells vary little in appearance. A considerable proportion of them have neutrophil granules and are early myelocytes, and others are almost identical in appearance except for the absence of granules—these are presumably myeloblasts. (× 635).

latter term is defined in *Gould's Medical Dictionary* as an increase in the size of an organ due to the increase in the number of cells, but Willis (1948) considered that this definition is too broad to be of value as it includes, for example, all the tumours. He considered that the term hyperplasia should be restricted to the proliferation of the cells of a tissue either (*a*) as a compensatory response to loss of tissue of the same kind, or (*b*) as a result of disturbed hormonal control as is found in those organs whose function and structure are under hormonal control, such as the breast, uterus, and prostate.

The compensatory hyperplasias are closely allied to repair, but differ from it in that the cells replaced are more specific in character ; for example, excised liver or endocrine gland is replaced by liver or endocrine glandular cells. Another example is hyperplasia of the bone-marrow, where there may be an increase in the number of erythropoietic cells in response to an increased demand for red cells. In other words, hyperplasia compensates for loss of specific kind, while the function of repair is to fill a breach or replace the damaged tissue with fibrous tissue.

Although it has been shown that the gingivæ are to some extent influenced by hormones in

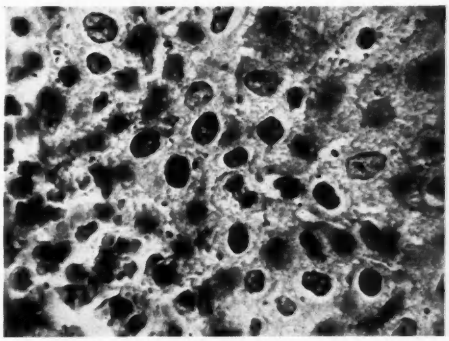


Fig. 13.—*Case* 3. Showing the basal layer of the gingival epithelium. The basement membrane is poorly defined and mitosis of an epithelial cell can be seen. The connective tissue underlying the epithelium is œdematous and contains some degenerate inflammatory cells. (× 635.)

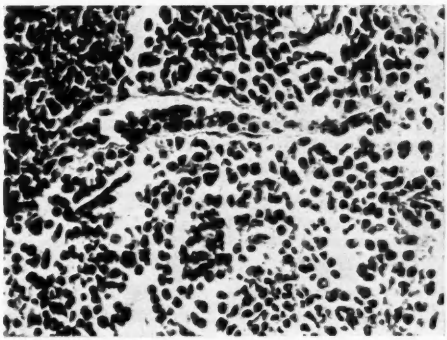


Fig. 14.—*Case* 3. Showing a capillary packed with leukæmic cells and situated within the gingival tissue. (× 470.)

the blood-stream, they cannot be regarded as being under their control in the same way as the breast or uterus, nor can the fibrous tissue formed be regarded as being of any specific function other than repair.

It seems, therefore, that in view of these observations it would be preferable, and possibly more accurate, to adopt the use of

some non-specific term such as enlargement, as suggested by Glickman, and then to qualify this when the cause has been found and the changes taking place have been discerned. However, it would not be possible to accept Glickman's category of non-inflammatory hyperplastic gingival enlargement for the idiopathic enlargements, or for the enlargements associated with epanutin. As many workers consider that these conditions are an exaggerated response to irritation, it would be more convenient to classify them together with the other enlargements under the heading of "conditioned gingival enlargements", thus differentiating them from the enlargements due to inflammatory changes where no systemic factors can be implicated.

I wish to thank Dr. A. M. Barrett, of the Pathology Department, Cambridge University, for his help in obtaining the post-mortem specimens, Mr. G. Weston and Mr. L. F. Gore, of the Dental Pathology Department, University of Liverpool, for their help in preparing the photographs and photomicrographs, and Miss M. Bundy, of the Department of Parodontal Diseases for technical assistance in the preparation of many of the sections.

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PERIODONTAL CURETTEMENT IN THE PREMAXILLA

DEEP curettage at open operation in the region of the premaxilla is described and well illustrated. A case of continuous suture treatment, the "serpentine suture", in which the suture is threaded through the severed papilla around the lingual aspect of the tooth, then through the next papilla, around the labial aspect of the adjacent tooth, through the papilla again, and so on until the entire area of operation has been covered with what in actual fact becomes a "purse-string" suture, is described and illustrated. This is left in for as short a period as 48 hours, having been protected with tinfoil.

It is claimed that by this method of treatment the æsthetically unsatisfactory result obtained by the operation of gingivectomy can be avoided. Physiological recession is said to follow the curettement owing to retraction of the connective tissue organizing from the blood-clot which is formed.—INGLE, J. L. (1952), *J. Periodont.*, **23**, 143.

DECISIONS OF GENERAL MEDICAL COUNCIL

THE Council has directed the restoration to the Dentists Register of the name of WILLIAM ISAAC TROMANS; and the erasure from the Register of the name of THOMAS JOHN WALTERSON-WILLIAMS.

SOCIETY NOTES

INSTITUTE OF BRITISH SURGICAL TECHNICIANS (INC.)

Dental Section

A LECTURE on the "Heat Treatment of Cast Dental Golds" was given by Mr. C. A. Munday, L.I.B.S.T., at the Eastman Dental Hospital, on February 17.

After emphasizing the importance of a sound casting in the first instance, Mr. Munday proceeded to enumerate the various types of

Mr. C. A. Munday.

modern gold alloys, in the selection of which for dental work the most important attribute was the ability of the metal to be annealed and hardened by heat treatment. The fundamental structure of metals and the effect of various stresses was explained with the aid of diagrams. Cold working, hardening by alloying, and precipitation hardening as a means of achieving resistance to "slip", and increasing the strength of the metal were enlarged upon, together with the necessity for producing the optimum degree of hardness which would give other properties such as toughness and elasticity. The processes of annealing and hardening and the relative merits of the salt bath and the controlled furnace were discussed, the lecturer expressing a preference for the latter method of hardening as covering the whole field required, in addition to providing several other useful functions in the dental laboratory.

The practical application of the principles expounded and the actual processes employed in the heat treatment of dental golds in the laboratory, with the temperatures and times to be observed, were described in detail and the lecture concluded with references to facts and figures concerning a well-known dental wire.

A number of questions from the audience were adequately answered by Mr. Munday and those present were invited to inspect charts showing the figures graphically and a series of photomicrographs depicting the structure of similar alloys at various stages during heat treatment.

A lecture will be given by Mr. Frank Popper, L.D.S. R.C.S. (Eng.), M.D.S. (Johannesburg), on "Functional Balanced Dentures—Introducing a New Posterior Tooth Design" on Tuesday, April 14, 1953, at 6.30 p.m. at the Eastman Dental Hospital, Gray's Inn Road, W.C.1.

Admission tickets are obtainable on sending stamped addressed envelope to the Institute or through members of the Institute.

UNIVERSITY OF PENNSYLVANIA

The schedule for the World Conference on Endodontics to be held at the School of Dentistry, University of Pennsylvania, June 21–27, 1953, has now been completed. The programme will include outstanding men in their respective fields from various parts of the world. Among the leading endodontists who will participate in the Conference are Dr. B. Nygaard Ostby, of Norway, Dr. W. Stewart Ross, of England, Dr. Francisco Pucci, of Uruguay, Dr. George Hare, of Canada, and others. In addition, a number of prominent physicians such as Dr. John A. Kolmer, Dr. Frank Melemey, and Dr. W. Paul Havens will take part in the programme.

The conference will consist of lectures during the morning sessions and seminars in the afternoon. The class will be divided into groups of 15 in the afternoon, to be presided over by a group leader. The group leader will then lead the discussion on the topics considered during the morning lectures. Each group will be assigned to group leaders on a rotating basis. Among the seminar group leaders will be Dr. W. Stewart Ross, Dr. Nygaard Ostby, Dr. F. Pucci, Dr. Ralph Sommer, and Dr. George Hare. The conference will be under the direction of Dr Louis I. Grossman.

An audio-visual programme and an endodontic forum have been arranged for several evenings. Social activities consisting of a reception preceding the conference, a tour of the city, and a banquet upon conclusion of the conference have also been arranged. Tuition fee for the conference $100. Applications will be accepted in the order received. Apply to Postgraduate Courses, School of Dentistry, University of Pennsylvania, 4001 Spruce Street, Philadelphia.

Lester W. Burkett, D.D.S., M.D.

CONTINENTAL DENTAL SOCIETY

Spring Meeting, 1953, at the Eastman Dental Hospital, Gray's Inn Road, W.C.1.

PROGRAMME

Friday, April 24, 1953 (for members only).

Clinical Meetings at the following Surgeries:—

1. Mr. J. Ellinger, at 3, Berkeley Court, Baker Street, N.W.1. Tel. Welbeck 5179. "Orthodontics within the Range of General Practice."

2. Mr. F. Fraser, at 411, Finchley Road, N.W.3. Tel. Hampstead 3484. "Wisdom Tooth Surgery under Pentothal." Anæsthetist Dr. M. W. P. Hudson. (Members who wish to present their own patients are advised to communicate with Mr. Fraser in good time.)

3. Mr. K. Giesskann, at 55, Bryanston Court, George Street, W.1. Tel. Paddington 6223. "Practical Demonstration of Minor Surgery including the Use of Diathermy."

4. Mr. M. Marks, at 106, Park Street, Grosvenor, W.1. Tel. Mayfair 3151. "Demonstration of Electro-surgery."

5. Mr. W. Reif, at 75, Wimpole Street, W.1. Tel. Welbeck 3242. "Modern Chromocobalt Prosthetics". "A new Inlay Impression Technique."

Note that the above-named five lecturers have very kindly consented to give two demonstrations: From 2.30 p.m. to 4 p.m. and also from 4.30 p.m. to 6 p.m. Will members please apply to Mr. E. Magnus, 736, Kenton Road, Kenton, Harrow, Middlesex, Tel. Wordsworth 2070, and indicate which demonstrations they wish to attend. The number of those to be enlisted can naturally not be unlimited.

Saturday, April 25, 1953 (for members and guests). At the Eastman Dental Hospital.

10 a.m. Mr. F. Robert Munz, "Full Denture Prosthesis". Mrs. Hilda Wharton, "Orthodontic Diagnosis and Plan of Treatment". Casual Communications. (Will members who propose to contribute to this item of the Programme advise as soon as possible the Chairman, Mr. H. J. Turkheim, Tel. Welbeck 1888.)

2.15 p.m. Mr. F. Fraser, "An improved Technique of Extra-oral Radiography".

Sunday, April 26, 1953 (for members and guests). At the Cora Hotel, Upper Woburn Place, W.C.1, Tel. Euston 5111 (near Euston Station).

10 a.m. *Table Clinics*: (1) Mr. H. H. Hirst, "The Full Denture Base". (2) Mr. E. Rosentiel, "Electroforming Hydrocolloid Impressions."

Members of the Profession welcome.

LONDON COUNTY COUNCIL

(Extract from the Joint Report of the Health Committee and the Establishment Committee)

Maternity and Child Welfare Service

On July 5, 1948, under the National Health Service Act, 1946, the Council had transferred to it with the maternity and child welfare and general dental service work, the equivalent of 10 full-time dental officers. At the same time, the equivalent of 19 full-time dentists at hospitals were transferred from the Council's service to the hospital authorities. As a hospital authority before July 5, 1948, the Council's policy was to provide dental services for adults in its hospitals. The bulk of the maternity and child welfare dental work in London has, therefore, since that date continued to be dealt with largely by the hospitals (including teaching hospitals) and by general dental service practitioners under the National Health Service Acts. At present the number of full-time dental officers doing maternity and child welfare work for the Council is the equivalent of just under five, but it would have been the equivalent of only about 1½ full-time officers had not the school dental officers given sessions to it.

School Dental Service

Although there has been an improvement in the number of dental officers employed, the situation as regards the School Dental Service has been fluid and uncertain. It has not proved possible with existing staff to provide a comprehensive service of regular dental inspection and advice followed by early treatment of the defects found. Of the children seen at medical inspections in 1951, 20·6 per cent (representing 35,609 children) were recommended for dental treatment.

The Minister of Education, in a statement in the House of Commons on Oct. 30, 1952, appeared to assume that there should be one school dentist available to every 3000 schoolchildren. In London, the school population is approximately 422,000 and the Council in November, 1952, had the equivalent of about 51½ full-time school dental officers. This gives

a ratio of 1 to 8201. On the basis of the ratio of 1 to 3000, London would require the equivalent of approximately 140 full-time dental officers for the School Dental Service alone.

Proposals

Staff.—The Health Committee consider that for the present the Council should aim at a service based on the ratio of 1 to 3000 and that dental staff should be engaged where possible, giving priority in areas where there is the greatest need. Owing to the difference in remuneration between dentists in the General Dental Service and the Hospital Dental Service compared with dentists in the service of local authorities, it is open to doubt whether the priority dental services can be built up sufficiently with full-time dental officers. Continued efforts will be made to recruit full-time and part-time dental officers and dental attendants and arrangements will be made for full-time dental officers to undertake extra sessions which will be paid for at the rate approved on March 18, 1952 (p. 160). It has therefore been agreed to the employment of up to 93 dental surgeons and up to 94 dental attendants in the first instance, if the recruitment position makes this possible.

E. M. Rankin
(*Chairman of the Health Committee*)
T. W. Gillinder
(*Chairman of the Establishment Committee*)

ABSTRACTS
from Other Journals

Facial Pain

The most common complaint that brings a patient to the dental surgeon is pain about the face, and it is, therefore, the duty of the dentist to make a proper diagnosis, for which he must have not only an understanding of the anatomical tissues involved, the normal and altered physiology of the nervous tissues, and the specific and non-specific entities related to pain, but he must also bear in mind the psychological aspect as well.

We have two types of cutaneous pain: the abrupt type with a quick onset, rather pricking quality, and which terminates quickly, and the burning type which is slow of onset, never reaches an abrupt climax, and recedes more slowly. A discussion on pain is incomplete without some consideration of the value of the psychological approach. It is important for the practitioner to realize that the treatment should be directed towards combating the initial cause whether it be mind or body. Pain is a variable concept and pain which may be excruciating in one may be barely perceptible in another.

Neuralgia refers to a nerve pain—pain along the course of the nerve; it is sharp, shooting, lightning-like, intermittent in character, and of relatively short duration.

Neuritis, on the other hand, is an inflammation of the nerve. It is deep seated, the ache being diffuse in character and relatively continuous, but varying in intensity. Neurosis refers to a functional disorder which is not associated with any known organic lesion. When a patient comes with a history of facial pain, a routine history and physical examination are the first requirements. As far as pain is concerned, there are some valuable questions that should be asked. For example—Was there a similar previous attack? Was the onset acute and sudden, or gradual? Is the pain localized or diffused? Is the pain sharp, dull, or boring? How long does it last, and is it intermittent or continuous? Does the pain radiate, and is it relieved by heat or cold? Is there any temperature, leucocytosis, tenderness, rigidity, nausea and prostration and syncope with that pain? Among the most common causes of facial pain is pulpitis and its result.

Heat and cold will aggravate pain which is caused by the condition of the pulp but have no effect on other types of pain. A tooth should not be removed without percussing it. Sometimes it is the most valuable test we can perform, for any tooth that is more sensitive to percussion than its neighbour should be

considered with suspicion. The X-ray should be used to verify the clinical findings.

The second most common cause of facial pain is probably sinusitis. For its size, the ear probably has a larger nerve-supply than any other organ in the body, as it is supplied by the 5th, 7th, 9th and 10th cranial nerves. Pain may be felt in the ear from conditions associated with teeth, with tonsillitis, nasal pharyngitis, disorders of temporomandibular joint, and with disorders of the cervical spine.

Most common involvement of the ear is otitis media. Another source of facial pain is impacted or malposed teeth. These completely imbedded teeth may produce a deep burning pain due to pressure on efferent nerve-fibres probably producing ischæmia. This pain is usually intermittent. Traumatic injuries may also produce facial pain; for example, fractures of the mandible are usually painful owing to continuous muscle pull. Pain can also be caused through healing when the jaws are in a poor position, so that treatment consists of relieving the impingement. If the fracture line is so placed as to allow lingual movement, the patient experiences pain every time he swallows. Maxillary fractures are not so painful as mandibular ones owing to muscle pull.

Dry socket may also cause facial pain of traumatic aetiology. This pain is a deep-seated, constant, boring ache, for the medullary portion of the bone is exposed and therefore the sensory efferent nerve-endings are exposed to constant stimuli unless protected. Together with this condition we have an infectious process as well. Treatment of the dry socket is to apply a sedative to the exposed bone until nature completes its task.

Tumours of the facial bone may be divided into the benign and the malignant. The benign tumours are not painful as a rule; malignant tumours, however, are usually painful. The pain is typical, constant, aching, and boring. Practically any disease that involves bone may give rise to bone pain, as, for example, Paget's disease, fibrous dysplasia, etc. Tic douloureux or tri-facial neuralgia is often seen in middle-aged patients, and women are more often affected than men. It is most commonly seen in the second division of the 5th nerve, with the third and the first divisions next affected in that order of frequency. It has definite trigger points, mainly in the supra-orbital, infra-orbital, and mental foramen areas. The temporomandibular joint may also act as a trigger point, as the auriculo-temporal branch of the second division of the 5th nerve supplies the joint as well. The pain is usually very sharp and lancinating and may last from 40 to 50 seconds.

It is usually followed by a period of relative freedom, when it returns again. The entire episode may last for an hour or more, when it is followed by a low-grade aching pain. The pain is usually unilateral and associated with fatigue and high nervous tension. Burning pain of the oral cavity and the tongue may be associated with vitamin deficiency and anæmia. The effect on the nerves is more central than peripheral. Pain in the tongue may be caused by many aetiological factors. Some conditions defy diagnosis, while others are obvious. Soreness of the tongue may be due to rough teeth, faulty artificial dentures, hepatic lesions, vitamin deficiencies, diabetes, syphilis, tuberculosis, and cancer.

The most common cause of pain in the temporomandibular joint is arthritis, suppurative or traumatic. Traumatic arthritis is probably the most frequent of all our three types. It may be acute or chronic; acute arthritis may follow a blow on the chin, and results in pain and tenderness, deviation to the side of the injury, and an open bite on the injured side. Resolution usually sets in, but aseptic resolution may result and progress to chronic arthritis. Traumatic arthritis due to loss of teeth may produce a very common condition called Costen's syndrome.

Pain is a subjective symptom and is therefore variable in different patients. Causes will defy the best of diagnosticians.—HARRIGAN, W. F. (1952), *Oral Surg., oral Med., oral Path.*, **5**, 563.

A Typical View of European Orthodontics

One must start with treatment as early as possible and also give advice to prevent anomalies of tooth position as early as possible.

A child who is in need of orthodontic intervention is an individual, with an individual

pattern of growth, and the solution of any orthodontic case requires individual treatment. The orthodontist must be careful in the application of standards or standard forms of treatment to solve the individual problems which confront him.

The author starts treatment with toddlers if possible. A great number, if not all, of the orthodontic anomalies which one finds in the permanent dentition as a result of faulty jaw relationships are already established in the deciduous dentition. It is logical to alter these faulty relationships at the earliest possible moment. The object of early treatment is to guide unsatisfactory developmental tendencies into the right direction.

In the newborn, the anatomy of the chewing musculature is built so as to effect a forward displacement of the lower jaw and to keep it there during the process of drinking. The lower jaw performs elliptical movements during the process of drinking. Later on, groups of muscles have such a function as to permit the jaw moving up and down, opening and closing. In the newborn, the muscles effecting a forward displacement of the jaw are much more developed, comparatively, than the muscles that move the jaw up and down. In older children it is exactly the reverse.

The tongue of the newborn takes up more space in the oral cavity than it does in the adult. Its edge is situated between the processes of upper and lower jaws, the tip of the tongue lies directly behind the lips, sometimes even in the rima oris. In babyhood the tongue is relatively larger than later on. It is thicker, broader, and shorter.

Because of its size, the tongue brings pressure to bear upon the tissues of the jaw. From the outside the cheeks and lips, being elastic tissues, exert counterpressure. If these two powers are rightly balanced a harmonious growth of the alveolar process, which contains the dental germs, will be promoted.

In the period during which the alveolar processes come into existence and the incisors erupt, the tongue is forced to draw back and the tip of the tongue takes up a position more posteriorly, against the hard palate. Thus the alveolar process develops between two elastic tissues, the tongue on the one hand and the cheeks and lips on the other. If the equilibrium is disturbed, this disturbance will not fail to show its effect.

Normal breast feeding, variation in the position of the baby in his cradle, normal nasal breathing, and no boredom of the baby are all factors that are important to the development of the face.—DUYZINGS, J. A. C. (1952), *Amer. J. Orthodont.*, **38**, 272.

Giant-cell Tumours, Osteitis Fibrosa, and Bone Cysts

Under this heading the authors describe these conditions as they occur in the long bones in a patient. The reference to oral lesions is very little. One author (McWhirter) maintains that these lesions are all fundamentally manifestations of the same process and differ only in their degree of vascularity, a feature which is largely determined by the age at which the developmental error occurs. Congenital giant-cell tumours in the jaws, commonly affecting several members of a family, tend to disappear spontaneously about puberty. They are, therefore, not regarded as true tumours. Histologically, however, they are identical with the isolated giant-cell tumours of the long bones. Excess parathormone can produce giant-cell tumours of the long bones, osteitis fibrosa, and bone cysts. Giant-cell epulis is simply a superficially placed giant-cell tumour, with or without marked bone involvement. It is possible that these lesions may also arise in situ as the direct result of trauma—an error in the repair of bone. It must be a rare event for a typical giant-cell tumour ever to become malignant.

The author (Hartley) maintains that the solitary giant-cell tumours are truly neoplastic and that they can be compared with a granulomatous condition such as actinomycosis. In the granuloma the tumour mass is due to spreading reaction in the tissues, whereas in the true tumour it is due to the proliferation of neoplastic cells which either displace or destroy the normal tissue. Cases reported in this article show all the characters of true neoplasms—focal in origin, progressive, autonomous in growth, invasive, and capable of

producing metastases. As in the other neoplasms, their essential cause remains a mystery. Neoplastic change, however, is more prone to occur in chronic hyperplasia. Many of the giant-cell tumours of the jaws are primarily lesions of localized osteitis fibrosa in which hyperplastic giant-cell tissue has become the dominant feature.

Finally, both the authors agree that a closer co-operation between clinician, radiologist, and pathologist is absolutely necessary for the proper assessment of these lesions.—McWHIRTER, R., and HARTLEY, J. N. J. (1952), *J. Fac. Radiol., Lond.*, **4**, 1.

Everyday Oral Surgery

The author stresses the necessity for retracting flaps of adequate size to facilitate good exposure of the entire field of operation and to prevent laceration to the flap-edges during instrumentation. The area of the flap must exceed that of the bone to be removed, for this ensures that the flap, when returned to its place, rests on sound bone. Healing takes place across the width of the flap and not along its length, so that a long incision will heal as quickly as a short one. The vertical incision should never be made opposite the centre of the tooth, because there is always a small amount of contraction associated with replaced flaps, and if the incision is made in this undesirable situation there will be a V-shaped depression or deficiency at the gingival margin with consequent cervical sensitivity. It was shown by means of histological sections that re-attachment of the gingival tissues and periodontal membrane occurs because there are always some periodontal fibres which remain attached to the tooth after a flap has been retracted.

A sound blood-clot is the best dressing for the routine extraction wound, and to gain this end the author is prepared to go to the length of perforating the lamina dura with a bur in several places and so get blood for the socket from the cancellous bone. The negative pressure set up by excessive expectoration is said to conduce to clot dislodgement. The question of rinsing is a moot one; of 200 cases half were allowed to rinse and half forbidden to do so: the incidence of dry socket was the same in both cases. Since it is necessary to maintain a proper blood level of penicillin, the use of antibiotics in the socket is irrational.

Other hints in the article include: alleviation of mental stress in the patient to promote better patient co-operation, e.g., seconal sodium, $1\frac{1}{2}$ gr. three-quarters of an hour before operation. Proper use of the elevator—the instrument is not to be used as a screw-driver. When extracting upper canine teeth, together with the two adjacent teeth, the forceps can be applied mesio-distally to the canine root, if this tooth is unduly resistant, after the adjacent teeth have been removed.

In attempting to clear up the question of hydrotherapy in connexion with dental operations, it is the author's custom to use cold agents immediately following surgery to reduce the œdema, and it is also used in the early stages of acute infection before suppuration has started. Heat is applied externally after suppuration and swelling have set in to induce a hyperæmia with consequent formation of a leucocytic barrier and localization of the infection.—BORDEN, S. M. (1951), *J. Canad. dent. Ass.*, **18**, 468.

Chromic Acid Burn

The use of chromic acid is discussed, it being pointed out that the judicious use of this substance must be based on an appreciation of the nature of the biochemical effects and properties of the drug. It is a powerful oxidizing agent acting as a caustic, so destroying both tissue cells and bacteria. The therapeutic property of chromic acid is dependent upon its oxidizing action, high acidity, and the precipitation of proteins.

The danger of producing enamel solution with acid of no greater than 10 per cent concentration is noted. Warning is also given of the production of troublesome craters in the interdental papillæ following the use of chromic acid for protracted periods of time, and illustrations are shown of a case in which chromic acid had produced extensive lesions of the oral mucosa in a patient where it had been applied in an indiscriminate manner.—SUGARMAN, M. M. (1952), *J. Periodont.*, **23**, 178.

BOOK REVIEWS

PARODONTAL DISEASE. A MANUAL OF TREATMENT AND ATLAS OF PATHOLOGY. By E. WILFRED FISH, C.B.E., M.D., D.D.Sc., D.Sc., F.D.S. R.C.S., Dental Surgeon, St. Mary's Hospital, London. Second edition. $5\frac{3}{8} \times 8\frac{3}{8}$ in. Pp. 252, with 87 illustrations. 1953. London: Eyre & Spottiswoode (Publishers) Ltd. 30s.

THIS book has only arrived at its second edition apparently under protest, for the first item which one encounters is an errata slip bearing some fourteen corrections referring to erroneous references in the text to the numbers of certain illustrations. Unfortunately this slip is far from complete, as there are many faults in the index, and spelling errors, including the names of Ehrlich, Gottlieb, and Mandiwall.

One highly desirable improvement has, however, been made in the second edition. This is the placing of the explanatory captions to the illustrations in the atlas of pathology opposite each of these, instead of in a block at the beginning, as was done in the first edition. By this means the photomicrographs have their value considerably enhanced.

In reading this work it is most important to appreciate that it does not profess to be a text-book. The preface claims that it outlines a method of supervising the health of the supporting tissues from infancy to old age. The method is that of Dr. Fish. The consideration is of inflammatory lesions of the periodontium.

Throughout, the author adheres strongly to the use of the prefix paro-, even to the extent of terming the ligament the parodontal membrane, except for one occasion on which it rejoices in the more usual "periodontal membrane", whilst "paradontoma" also appears. Similarly the words "tartar" and "pyorrhœa", which must now be regarded as lay terms, just as is "decay", are used consistently. These examples are, however, understandable, and illustrate, perhaps, the strong desire of the author to desseminate his views in as simple language as possible. It is, in fact, the author's well-known ability to write in a style which makes for easy reading, that will encourage the reader who is not prepared to think deeply to accept without question the views put forward.

Two additional chapters have been included in what is otherwise a revision of the first edition. The purpose of the first of these is to enable the author to express his views on the role which articular disharmony plays in the aetiology of periodontal breakdown, and to describe his design of removable splints. The second, which appears in the form of an appendix, expounds a new principle in partial denture design and is a reprint of a paper already published in the *British Dental Journal*.

There are many statements with which some people will not agree, but they will stimulate thought and it may well be that these represent the true value of this work. They do, however, together with the fact that other views are neither discussed nor referenced, seriously limit the class of reader to whom the book can be recommended. It cannot be recommended to undergraduate students, but the graduate who has read widely will find himself stimulated and encouraged to make further investigations. He who seeks for information about electrosurgery, curettage, flap operations, and equilibration by grinding, as well as many other methods both diagnostic and therapeutic which are now widely practised in periodontology, will be disappointed.

TEXTBOOK OF FUNCTIONAL JAW ORTHOPAEDICS. By Professor KARL HÄUPL, M.D., Innsbruck; WILLIAM J. GROSSMANN, M.D., L.D.S. R.C.S. London: and PATRICK CLARKSON, M.B.E., M.B., B.S., F.R.C.S., London. $6\frac{1}{8} \times 9\frac{3}{4}$ in. Pp. 408 + xii, with 309 illustrations. 1952. London: Henry Kimpton. 60s.

THE authors have "endeavoured to present an up-to-date view of the theoretical basis and the practical aspects of functional orthodontic therapy" and have succeeded in that object. The use of Schwarz's active removable appliances is covered, but their consideration is secondary to the main theme of the book. The influence of the muscles of the lips, cheeks, and tongue on the positions of the teeth before

and after treatment could with advantage have been much more fully described. Certain statements apparently of fact, e.g., with reference to nutritive substances in human milk, call for greater amplification than is given by the context of this book. It is stated that during the period of deciduous and mixed dentition "as a rule no difficulty will be encountered in inducing changes in the position of the mandible". Many orthodontic teachers will feel that a great deal more research should be done before such a statement can be presented to undergraduates. The text recommends that treatment in the mixed dentition "should aim at controlling the development of the jaws . . . together with that of tooth eruption by the application of physiological stimuli". This may suggest to the semi-tutored that the orthodontist has a greater understanding of the physiological stimuli to tooth eruption than is in fact the case. (The text throws no new light on the problem of tooth eruption.)

The orthodontist is given some understanding of the techniques of the maxillo-facial surgeon in a clearly written final chapter.

Although an extensive list of references is given, one misses a number of pioneer works of fundamental importance by British and American investigators.

The production is of a high standard, with copious illustrations.

J. S. B.

LETTERS TO THE EDITOR

Seating Abutment Dies

March 12, 1953.

To the Editor,
Dear Sir,

I would like to thank Mr. R. Williams for his interest in my articles and for pointing out the omission of quite a serious point which was otherwise taken for granted, i.e., the casting first of the reverse side of a wax squash-bite.

Naturally great care must be taken to ensure freedom from distortion in both handling and insertion of an abutment die, and consequent casting of the teeth impressions.

Any refinement of technique such as the one he suggests, which will ensure accuracy and stability, is to be highly recommended. In casting the reverse side first, however, care must also be taken to make certain that no material is allowed to penetrate to the working side as may be the case if the opposing teeth have fractured the wax, or in picking up any plaster from the bench or fingers, otherwise correct seating of the die will in any case be prevented.

Yours, etc.,

E. A. SCHOOLDEN.

40, *Norfolk Street*,
Glossop.

Periodontal Pockets

March 19, 1953.

To the Editor,
Dear Sir,

I was surprised to find in your Radiographic Chart No. 10 under the heading of "Parodontal Disease" an apparent indication that periodontal pocket depth could be gauged by the normal type of intra-oral exposure.

The films shown only illustrated the extent of the bony loss and not the point at which the epithelial attachment was reflected from the cementum. This latter point marks the depth of the pocket and can only be illustrated radiographically by the insertion of some radio-opaque substance such as a gutta-percha or silver point (Cross, W. G. (1953), *Dent. Pract.*, **3**, 206).

This differentiation is of considerable significance in prognosis. If the actual pocket depth is small and the amount of bone loss great, it indicates that there is soft connective tissue into which new bone can be deposited and new fibres of attachment be differentiated if conditions for regeneration become favourable. Should the pocket extend almost to the margin of the remaining alveolar bone, the process of repair and regeneration can only occur after successful completion of the difficult operation of curettage. Permanent impairment in the degree of support is, therefore, far more likely to result from the second type of case.

Yours, etc.,

A. BRYAN WADE.

The Royal Dental Hospital of London,
School of Dental Surgery.

OFFICIAL SUPPLEMENT OF THE

SURGICAL INSTRUMENT MANUFACTURERS' ASSOCIATION (INC.)

DENTAL LABORATORIES SECTION

Chairman: E. G. EMMETT, F.I.B.S.T.
Administrative Offices: 6, HOLBORN VIADUCT, LONDON, E.C.1
Telephone: CITY 6031

Vol. III, No. 1 April, 1953

Editorial Committee: D. M. BEAUCHAMP; H. J. POTTER, F.I.B.S.T.

EDITORIAL

"I AM delighted to seize this opportunity as President of the Dental Laboratories of Great Britain to welcome the President of the Dental Laboratories of France and his wife. We are extremely honoured by their presence. I ask them to convey the fraternal greetings of our members to the members of the French association, and assure them once again of our desire to collaborate with them and all other countries in every possible way."

Such was the greeting given to a master dental technician of another nationality, who, with energy of mind and body, had taken the trouble to journey to this country to support our week-end conference, join with us in festivities, and with pride to show samples of the workmanship of his compatriots and competitors, samples which on his arrival had been the cause of seven hours' detention by the airport customs officers—an inconvenience the suffering of which was laughed off as having been well worth while.

Of equal, but domestic, interest was our entertainment of one of the founders of the British association and his wife: one who in 1930 worked hard for the organization of those in our profession, started them on the road, and at an appropriate time negotiated with the Surgical Instrument Manufacturers' Association for a dental laboratories section to be formed.

The *retrospect* to 1930 shows much progress, not only in numerical growth, but in the establishment of an ethical policy for the section, and standards of conduct for the members—objects which should be shared internationally. We take pride that in London, the largest city in the world, under S.I.M.A. auspices a delegate from the young state of Israel has consulted with the British President; a dental laboratory operator from Paris, France, has been introduced to a dental surgeon from Galveston, Texas; and that a dental surgeon from Oslo, Norway, has met and chatted with dental technicians from New Jersey and California, U.S.A.

The *prospect* for 1953 is therefore encouraging, for now the enthusiasts in all countries may expect the multiplying of the friendships already made, and must commence the task of preparing for a rally on the occasion of the next International Dental Congress, wherever it may be, with the ultimate aim of a world federation of dental laboratories.

★ ★ ★ ★ ★

Those dental surgeons and dental technicians who have interests in scientific subjects away from their daily work will do well to pay a visit to the sixtieth exhibition of the Physical Society to be held at the Imperial College, South Kensington, April 13–17. The display is impressive in quality, and provides an extensive array of the scientific achievements of our country.

A supply of free tickets, available for limited periods, has been secured by our secretary, and may be obtained on application to our head office.

ANNUAL DINNER AND DANCE

SURPASSING each of the three united efforts of previous years in enjoyment, interest, and success, the fourth conference week-end was initiated by a dinner and dance on the evening of Friday, February 13.

As on former occasions, our national President, Mr. Eric G. Emmett, with Mrs. Emmett, waited in the ballroom to receive our guests and members, their friends and ladies. The function was attended by some long-distance travellers, but the record was claimed by M. amd Mme. Drouhin from Paris. A specimen of the determination of which some S.I.M.A. men are capable was evinced by Mr. W. T. Murray who, soon after having set out from Hastings with his wife, in good time but in bad snowy and slippery weather, suffered an overturn in their car. After an examination at a roadside garage, and a few adjustments, they resumed the run to London, arriving two hours late: the ovation accorded them by the assembly was spontaneous.

Mr. and Mrs. Emmett welcoming Mr. and Mrs. W. A. Mellish.

The reception was followed by a dinner served in the banquet hall to the gathering of one hundred and sixty, among whom were the association's guests Mr. and Mrs. W. Mellish; M. and Mme. Drouhin; Dr. Olaf Saxe, Oslo, Norway; Mr. S. G. Davis, O.B.E., L.L.B.; Mr. H. Guy Drew, Mr. G. Maurice Down, Mr. T. M. Proudfoot, M.B.E.; and our secretary, Miss Sawers. Other guests of whose presence we were glad were: Mr. T. Youles, Chairman of Associated Dental Technicians; Mr. W. Warrington, Editor of the *Dental Technician*; and Mr. E. A. Dudley, Mr. K. W. Houghton, Mr. H. Maidens, and Mr. A. J. Pearce, our friends from the various dental supply houses.

At the close of the dinner Mr. Frank E. Martin, Chairman of the London Regional Branch, proposed the toast of the guests, and referred to each with well-chosen words, thanking them all for honouring us with their presence, and for the geniality and good fellowship they had thereby diffused.

Mr. H. Guy Drew, the esteemed chairman of the parent S.I.M.A., responding to the toast, said: "Quite inadequately I am responding for your guests. We have Mr. Saxe, from Norway; we have the President of the Fedération Nationale de Prosthèse Dentaire and his charming wife; but in addition to that we have the wives of the members of this Association. Mr. President, if you wish to know in what high esteem your section is held you should look at the charming way in which the wives and ladies who have come with you this evening have decorated themselves, without the aid of their husbands, to show you what they think of you.

"I have always held that the British craftsman and the British industry is the finest in this world. I have been across to America many times and I have told them: 'Wait boys until we get back on our feet and we will show you what competition really is'. not only in commercial ways but in making things, because I believe that the British people can set an example to the whole world in conscientious craftsmanship, in study and hard work, and in loyalty to ideals, which is the one thing

that is going to make this old world stand on its own feet again.

"On behalf of your guests, Mr. President, we are very proud to be invited here. You and your Federation and your educational system and the spirit you have encouraged among your craftsmen are preserving everything that is fine in English tradition, and on behalf of your guests I thank you for inviting us here to-night, for the splendid time you have given us, and for the example you are setting us, and may you always prosper."

The toast of "The Dental Section of the Surgical Instrument Manufacturers' Association" was proposed by Mr. W. Mellish, who said: "I feel to-night that it is a great privilege to propose the toast of the S.I.M.A. Now I wonder if I may start by telling you what so many people have asked me, and possibly many of you here to-night ask yourselves—what is the S.I.M.A.? What does it do? What is the set up, and what is the background? I wonder Mr. Chairman, if I may for one moment take you back into a little history.

"About twenty years ago a demonstration was arranged in London by the Amalgamated Dental Company of a new technique in casting, which enabled many of the laboratory owners to assemble and witness the demonstration of the new or supposedly new technique. At that meeting there were men from all over the country, and among them a certain individual who for the moment shall be nameless. On looking round that gathering he decided that here were many men working in a haphazard and chaotic fashion and trying to run their businesses in a profitable way, with what I must admit was intermittent success. That individual looking around, saw in that nucleus of laboratory owners the possibility of an ordered and well-organized association. It was an opportunity that any far-seeing and thinking man could not possibly miss. Looking round, knowing the evils that were going on in those days, knowing the unethical practices in some of the laboratories, knowing the price cutting, the sweated labour, and the slaving industry under which those men were striving, that individual was prompted to think hard. He saw the possibilities of bringing those men together, but he knew quite well it would mean hard work, plenty of kicks, and very few half-pennies. What they wanted at that time was a leader and someone they could trust, someone who could feel with them, someone who was part of them, and someone upon whom they felt they could rely. That man set to work, addressed meetings all over the country, spent an enormous amount of time and those early members can never realize the amount of hard work put into those early days. Eventually he got around him a body of men and a woman secretary whose name I am quite sure will come back to some of the older members here to-night, Miss Gorringe of the Dental Mechanics' Guild, who acted as secretary for quite a long time. She has passed on now, but not before she had assisted him with a tremendous amount of spade work in an endeavour to get affairs going and some enthusiasm into those men. Finances were very low in those days and the meetings took place in a room of the 'Valiant Trooper' in Goodge Street. Some of you may remember it, a very good name for the work to be undertaken. Well you know they contributed a certain amount towards the general expenses but things were going very

Mr. E. G. Emmett greeting M. and Mme. Drouhin.

hard, but he plodded on and those members, so few at the start, gradually increased until in 1937 there were, I believe, eighty-five members and the society, or shall I say the Dental Laboratory Owners Association, had been formed. In 1937 it was in existence, it was creating a certain amount of interest in the profession and also gaining a certain amount of recognition. In 1938 it felt large enough and able to take care of itself in such a way that it could approach the executive of the S.I.M.A. for affiliation as a dental section of that body, and in that year it was transformed from the Dental Laboratory Owners Association, with early beginnings in the 'Valiant Trooper', to the Dental Section of the S.I.M.A.

" Well now when it went over, or very soon after, Mr. Killick took over the reins and carried on for some time and eventually things went on in the usual way.

" Now you may ask, those of you who are unacquainted with it, what is the S.I.M.A. doing, what have they done and what are they going to do ? That is a pertinent question and an important point. First and foremost the S.I.M.A. have set about inculcating into their members fundamental factors in ethical standards. They have created, to the best of my knowledge and belief, a standard for their members which was unacceptable in the days before the early Dental Laboratories Association. They have also throughout the whole of the dental profession created a feeling of respect for the craftsman to which he is entitled, not like the old days when your craftsman went with apologies and his cap in his hand in an endeavour to obtain work from those who cared to grant it. Also I believe the S.I.M.A. now have two members on the National Joint Council. You have seven branches throughout the country, including one in Scotland and another in Wales. You are represented on the Committee of the British Standards Institution dealing with dental materials and equipment. You have members dealing with these matters which are not only of interest to the laboratory owners but are of interest to the general profession, and members whom they respect and welcome. You have also done a tremendous amount in the way of education for the youngsters in the dental laboratories. You have done an enormous amount of good I feel

for those youngsters and you are also helping with the London City and Guilds and you are doing your utmost to try and raise the S.I.M.A. to a place that it is worthy to occupy. That is at home. Now what else have you been doing? Very wisely, and I say this very seriously, with a good deal of wisdom you have made international contacts with various countries, and you have endeavoured to try and understand the troubles of your neighbours. That, in my opinion, Mr. Chairman, ladies and gentlemen, is a very wise policy because if you can understand your neighbour's difficulties and your neighbour's troubles, he in his turn will endeavour to understand yours. We were told some years ago that this land was still an island, but you must remember to-day that the water we all thought so proudly was our protection is no longer our protection. We are now a member of a European body because that water which was our protection does not serve the purpose it did in the early days going back to 1900.

"We started with eighty-five members and I believe there are still to-day fifty-six of those original members in the S.I.M.A. and I am delighted to see that there are some here with you to-night. Since that time S.I.M.A. has gone on steadily from strength to strength and I am happy to hear to-night that the original eighty-five with which S.I.M.A. started have now been increased and the grand total is now 385. I think you should be very pleased and proud to know you have reached that figure.

"During the past four years, I understand, your Chairman has been guiding the fortunes of the Dental Section. I hear on all sides of his popularity, of his kindly feelings and his understanding of the many problems that beset not only himself but other laboratories throughout the country, and it is grand to feel you have a man like Eric Emmett at your helm and I am quite sure that I am echoing your thoughts as well as my own feelings in saying, Mr. Chairman, long may you be spared to guide this Dental Section of S.I.M.A. from success to success and from strength to strength and I pray that God will grant you health and strength to enable you to do so.

"I would also like to touch on another old stalwart who is not with us to-night, one who has been a grand friend, guide, and philosopher to quite a number of members of S.I.M.A. I refer to our old friend Raymond Mather, who has the respect not only of yourselves but of the whole of the dental profession.

"And now perhaps you can understand the pride and pleasure which that individual feels to-day in looking round and seeing the Dental Laboratories Association which is now S.I.M.A. and to see that child grow to maturity, and I must confess to you in all sincerity and in all humility that that person, that individual and founder, was, I fear, myself.

"I saw the evils in those days and I still see them, and I say to you—don't feel that you have done all you can do; don't sit back and suffer from that dental trouble which is apathy; you have started something which is worth while, but I beg of you to remember that some of the evils of my early days still exist around you. You still have price cutting, you still have unethical practices, and I would ask you to see that they do not catch up on you.

"Just to close, I would like to say to you—you have created from that very early beginning which I am proud and happy to have started, something worth while and I would say to you again—please remember that it is easy to slide down the ladder but so difficult to get up again. I pray God will bless this Dental Section and give those who are guiding it courage and wisdom in the handling of its affairs."

Mr. E. G. Emmett, in responding to the toast, said: "Well, ladies and gentlemen, I observed the furtive and warning eye of our very excellent master of ceremonies when asking me if I were ready to reply to this toast, and I interpret it in two words 'Be brief'—and so I find myself in the unfortunate position of not being able to give the consideration to this reply which it so much merits.

"This is the fourth occasion on which I have had the privilege of presiding over this annual function and so it is my duty to reply to this important toast.

"I feel I cannot lightly pass over the eloquent and delightful way in which our old friend,

Mr. Mellish, has proposed this toast. I am sure that the picture he presented to us of the progress of this organization must have been enlightening to many of you, and I feel that many of our members would do well to pause gratefully over the unselfish work put in by him and his helpers of those days. Since the early days when he as our first chairman steered our destinies he has reached great heights in the dental field, and although the proposer of the toast to our guests touched upon these, I would like to tell you that he has been a president of the Incorporated Dental Society, Southern Counties Branch; he is president of the Dental Anæsthetists' Society; vice-chairman of the Southern Counties Council of the B.D.A.; and chairman of the Dental and Allied Exhibition Committee of the International Dental Congress, 1952.

"I ask you, ladies and gentlemen, with such a man to start things for the Dental Laboratories Association, we should be ashamed if we had not made progress.

"There is no doubt that dentistry is passing through a difficult phase of re-adjustment. Many of our members are experiencing considerable difficulty in maintaining their position in prosthetic dentistry. It is lamentable that many brilliant and experienced technicians for economic reasons have had to look for their livelihood in other spheres.

"But you will no doubt expect me to say something on our policy, but I do not propose to do so since many of you have heard us discourse on this subject on a number of occasions. You will know our policy—our policy is unchanged. We are continuing to play our part in every aspect of dentistry and we shall continue to do so. It culminates of course in our desire to serve the public through the dental practitioner and to see that the patient benefits from the highest standards of materials and the highest standard of craftsmanship compatible with an economic schedule of charges and salaries to all concerned.

"I must, ladies and gentlemen, touch on what I consider to be the high-light of this week-end and that is the visit of the President of the French Dental Laboratories Association and his wife, and since I am not a French linguist I have prepared a translation in French for our friends and I am going to read it in English. 'We are extremely honoured to have with us this evening at this dinner M. Drouhin and Mme. Drouhin, and although they have been welcomed already in the toast proposed to our guests, I am delighted to seize this opportunity as President of the Dental Laboratories of Great Britain to welcome the President of the Dental Laboratories Association of France. We are extremely honoured by their presence. I ask them to take back with them the fraternal greeting of our members to the members of their Association and I assure them once again of our desire to collaborate with them and all other countries in every possible way for the mutual benefit of the Craft.'

"And now, ladies and gentlemen, I arrive at my personal 'thank yous'. I do thank our old friend Mr. Mellish for the way in which he has proposed this toast and you, ladies and gentlemen, for the acclamation with which you received it. I must thank our much travelled committee, as I usually do on this occasion, and I say once again to-night in all sincerity that without the magnificent contribution they make, this organization could not progress—therefore a personal thank you to all the Committee; some of them travel from Glasgow, West of England, and Cardiff, and one can visualize what a contribution that is. My personal thanks to our Vice-Chairman, Mr. Alex Grant, who is unfortunately not able to be with us this evening. He has always been a stalwart on that committee and I do want him to know, as he does already, that we are grateful to him —and myself in a particular sense as I have valued his guidance on all occasions. To Mr. Guy Drew, who has always been ready with his help and assistance whenever I have wanted it. I thank him sincerely for his help during the past year and before that time. And now I thank Mr. Sidney Davis and Miss Sawers for the work they have done. I also thank those trojans, the two editors of our Supplement in the DENTAL PRACTITIONER, Mr. Potter and Mr. Beauchamp. The amount of work these two put in in order to make a success of that particular thing is to use a phrase 'nobody's

business'. I do feel that they are making a tremendous contribution for us. I am going to thank, too, Mr. Youles, who is Chairman of the Associated Dental Technicians, and who works hard in educational matters in every possible way, and Mr. Warrington for their co-operation during the time I have known them. I thank them personally for that. I must thank, too, somebody who is not able to get here for various reasons, usually because he is working when I am not working, and that is that backroom boy, my partner, Mr. Coode. Then I thank Mr. Cyril Booth, the organizer of this evening's function and the entertainment to follow, to say nothing of the exhibition to-morrow. The enormous amount of work entailed in arrangements of this kind, and particularly this year, is really a tribute to him and even I do not know the amount of work involved and I am sure we are very grateful to him indeed. Here also I would like to thank the lady who puts up with the amount of time he spends away from her, his wife. Last, but not least, I thank my own wife for putting up with me. One further thought which has eluded me is a 'thank you' to Miss Small, who comes along to our lectures and educational activities so that we have a record and we are very grateful for all she does on our behalf.

"Before I conclude I have one very pleasant duty to perform. It was felt that our guests from France had honoured us, as has already been said before this evening, by coming this evening, and we thought we would like to give Mme. Drouhin a little memento of this occasion to take back with her, and it was felt, and again the brain behind it was Cyril Booth, that no better memento would be a picture of our beloved Queen.

"We are very grateful to our old friend and member Mr. Stephen Rohan for coming along this evening and acting as interpreter.

"Finally, ladies and gentlemen, I wish the Laboratories Section of S.I.M.A. every success and long may it continue to serve."

On returning to the ballroom with Mr. Martin as a capable master of ceremonies, opportunity was provided for dancing. During intervals we were entertained by the singing of Mr. Derek Barsham, baritone, and an exhibition of ballroom dancing by Harry Boult and Elsa. The sum of £6 was collected to be sent to the Lord Mayor's Flood Relief Fund.

A successful evening was brought to an end as the two Presidents and their ladies were surrounded by a circle singing "Auld Lang Syne" at midnight.

NEWS FROM HEAD OFFICE

Week-end Conference.—The week-end conference held on Feb. 13–14 was an outstanding success and thanks and congratulations are due to our energetic organizer, Mr. C. M. Booth. Detailed reports of the various activities will appear elsewhere in this and subsequent issues of the Supplement. Arrangements are now in hand for next year's conference.

Wages during Sickness.—The Unions' proposal to extend the period of half pay from 4 to 6 weeks per year has been accepted by the National Joint Council subject to (*a*) maximum entitlement to paid sick leave in any period of 12 months to be 24 weeks, 2 weeks on full pay and 22 weeks on half pay, (*b*) no entitlement to wages during sickness to arise until the employee has served for 6 months continuously with the same employer, (*c*) the maximum entitlement of 24 weeks in one year to cover the total for the preceding 3 years.

Payment for Holidays.—The Unions have pressed for paid holidays to be granted on the basis of six Bank or statutory holidays and one working day's holiday for each month of service. The employers' side of the N.J.C. maintained that employees should not qualify for annual holiday with pay until they had completed six months service, but this has not been accepted by the Unions and the matter has therefore been referred back to the constituent bodies.

Grading of Dental Technicians.—The association has pressed for a more realistic definition of Grades I and II and has been asked by the

Employers' side to submit a revised form of wording. A formula has accordingly been drafted and is now under consideration by the branches. Their observations will be considered by the main committee at its next meeting.

Termination of Indentures.—Members who, owing to the present economic circumstances, find themselves in difficulties in carrying out the terms of their apprentices' indentures are strongly advised to consult the association before taking any definite steps. Shortage of work does not constitute sufficient justification for dismissing an apprentice, and the indenture can only be terminated before completion by the closing of the business or by mutual consent between all parties to the indenture.

Educational.—Mr. A. O. Chick, L.D.S., M.D.S., and now Ph.D., of the Bristol Dental Hospital, has done a great deal for the education of dental technicians, serving on the committee for the dental technician's course for the City and Guilds of London Institute, and was one of the sub-committee dealing with the drafting of the syllabus for the advanced course in dental technology.

Our members and indeed all technicians will offer their congratulations to Mr. Chick, on his gaining the degree of doctor of philosophy.

COURSES IN ADVANCED DENTAL TECHNOLOGY
at the Borough Polytechnic, Borough Road, London, S.E.1.

Two summer term courses in Advanced Dental Technology, each of eight weeks' duration, will be held at the Borough Polytechnic, London, S.E.1. commencing Monday, May 11.

The studies of the respective courses will be devoted to (i) "Orthodontia", and (ii) "Partial Denture Construction". The scope of study will consist of the *First Part* of the prescribed syllabus for the Certificate of Advanced Dental Technology of the City and Guilds of London Institute.

Each course will comprise lecture, demonstration and practical periods, and will be held from 6.30 to 9.0: course (i) each Monday and Wednesday; (ii) each Tuesday and Thursday.

The fee for each course will be two guineas. Applications for enrolment from adult technicians, giving details of age, length of craft experience, and any previous craft qualifications, should be tendered *by post* to reach the above address not later than Wednesday, April 22.

INTERNATIONAL PROSTHETIC DENTISTRY EXHIBITION IN PARIS

At the Palais d'Orsay on May 16 an exhibition of materials and workmanship will be held all day from 9 a.m. until 6 p.m.

In rooms adjoining the exhibition hall various meetings will be held:

9.30 a.m. Annual General Meeting of the Ile de France Branch (Paris area) of the French Dental Laboratory Owners' Association.

11.30 a.m. Visit of personalities to the Exhibition.

1.30 p.m. Dinner in honour of prominent men in dentistry, and foreign delegates.

3.0 p.m. Annual General Meeting of the Laboratory Owners' Friendly Society (La Mutuelle de Prosthèsistes).

5.0 p.m. Inauguration of the first official school of prosthetic dentistry.

6.0 p.m. Close of Exhibition.

On May 17 at:

9.0 a.m. Meeting of the Bureau International.

1.0 p.m. Luncheon.

3.0 p.m. Resumption of the business of the Bureau.

Our French friends have asked that much English work be shown on this occasion, and those who are willing to respond to this request by lending samples of work must contact Mr. Beauchamp at once.